WOMAN'S GUIDE TO SEXUAL KNOWLEDGE

WHAT EVERY WOMAN SHOULD KNOW

Antiphlogistine for Patrice

EXPLANATORY KEY OF MANIKIN CHART.

1. Large breast-muscle.
2. Broad muscle of the back.
3. Serrated muscle.
4. Commencement of the external oblique muscle.
5. External; 6. Internal muscles between the ribs.
7. Seventh rib.
8. Twelfth or floating rib.
9. Internal oblique muscle, forming a broad thin sheet at the median line.
10. Long thigh muscle.
11. Ligament formed by lower end of long thigh muscle.
12. Hip muscle.
13. The muscle of the buttocks.
14. The fat of the buttocks.
15. Middle; 16. Inner; 17. Outer extensor muscles of the thigh.

18 and 19. Flexor muscles of the thigh.

20. Mammary gland or breast.
21. One of the bones of the spine.
22. Collar-bone.
23. First rib.
24. Seventh rib.
25. Twelfth or floating rib.
26. Breast-bone.
27. The muscles between the ribs.
28. One of the bones of the pelvis.
29. Upper front corner of the hip bone.
30. Upper back corner of the hip bone.
31. Socket of the hip.
32. Prominence on the bone of the buttocks.
33. Bone of the buttocks. (One of the bones of the pelvis.)
34. Passageway for blood vessels and nerves.
35. Bone of the seat.
36. Lowest bone, or lower end, of the spine.
37. Triangularis sternis muscle.
38. Beginning of the external oblique muscle.
39. Diaphragm, which divides the chest from the abdomen.
40. Upper border of the hip bone.
41. Concavity on the inner side of the hip bone.
42. Ridge of bone forming the lower border of the concavity.
43. Junction of the two pubic bones.
44. Pubic bone.
45. Upper end of the bone of the buttocks.
46. Part of the bone of the buttocks.
47. One of the bones of the spine.
48. Bone of the seat.

49 and 50. Ligaments connecting the bone of the seat with the bone of the buttocks.

51. Upper; 52. Middle; 53. Lower lobes of the lung.
54. Bronchial tubes.
55. Mammary gland or breast.
56. Nipple showing how all the milk ducts converge there.
57. Breast bone cut in half.
58. One of the bones of the spine.
59. One of the bones of the spine.
60. One of the bones of the spine.
61. Bone of the seat.
62. Muscles of the spine.
63. Spine, cut open so as to show the spinal cord and the nerves coming from it.
64. The muscle that surrounds and closes the anus.
65. Trachea or wind-pipe.
66. Portion of the pleura, or membrane covering the lungs.
67. A portion of the heart.
68. Diaphragm.
69. Large blood vessel leaving the heart.
70. Lower branch of the blood vessel leaving the heart.
71. Duct.
72. Membrane covering the liver.

EXPLANATORY KEY OF MANIKIN CHART.

73. The liver.
74. The stomach.
75 and 76. Coils of the large intestines.
77. The rectum.
78. The pancreas.
79. Esophagus or gullet.
80. Subclavian vein.
81. Pulmonary artery.
82. Pulmonary artery.
83. Large vein entering the heart.
84. A portion of the heart.
85 and 86. Vein.
87. Artery.
88. Uterus or womb at the end of pregnancy.
89. Cervix or mouth of the womb at the end of pregnancy.
90. Inner wall of the womb at the end of pregnancy.
91. Child in the womb.
92. Placenta or after-birth.
93. Vagina.
94. Labia minora.
95. Labia majora.
96. Anus.
97. Bladder.
98. Abdominal or belly cavity.
99. Clitoris.
100. Junction of the pubic bones.
101. Non-pregnant uterus.
102. Ovary.
103. Round ligament supporting the uterus.
104. Fimbriated extremity of the oviduct or fallopian tube.
105. Membrane dividing the two lobes of the great brain or cerebrum.
106. Portion of the great brain or cerebrum.
107. Cerebellum or little brain.
108. Medulla.
109. Uppermost bone of the spine.
110. Spinal cord.
111. Esophagus or gullet.
112. Most prominent bone of the spine.
113. Trachea or wind-pipe.
114. Cerebrum or great brain.
115. Nasal center.
116. Roof of mouth or hard palate.
117. Soft palate.
118. Tongue.
119. Chin bone.
120. Larynx or speaking box.
121. Thyroid gland.
122. Breast bone or sternum.

HEALTH AND BEAUTY—MAIDEN MEDITATION FANCY FREE.

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TO
Sexual Knowledge
OR
What Every Woman Should Know

CONTAINING

FULL INFORMATION ON ALL MATTERS PERTAINING TO THE GENTLER SEX; LOVE, COURTSHIP AND MARRIAGE; NATURE AND MYSTERIES OF REPRODUCTION, ETC., ETC.

A POPULAR TREATISE FOR

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THE WHOLE FORMING A

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BY THE CELEBRATED WRITERS AND AUTHORITIES ON MEDICAL SCIENCE,

Frederick Wilson Pitcairn, M. D.
Elizabeth J. Williard, M. D.

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TO THE

CHARMING GIRLS

WHO ARE TO BECOME

WIVES AND THE LOVING MOTHERS

OF THE

BRIGHT CHILDREN

WHO WILL FILL

OUR HAPPY HOMES

THIS WORK IS RESPECTFULLY

DEDICATED

BY THE AUTHORS

IN THE HOPE THAT ITS PERUSAL WILL NOT ONLY
ADD TO THEIR HAPPINESS BUT ASSIST THEM
IN PERFORMING WELL THEIR PART

IN THE

JOURNEY OF LIFE

PREFACE.

THIS most attractive work contains important truths that affect the vital interests of every woman. It is filled with information which should be possessed by every member of her sex, but of which, unfortunately, the great majority of women are in entire ignorance.

The Love which is the source of all domestic enjoyment, and which shows its beauty in the pleasures of Courtship, and finally blossoms into Wedded Bliss, is pictured in all its wonderful charms. The ideas that most young persons entertain of Love are both romantic and fanciful. It is often a proscribed topic either of conversation or advice, and all that is known concerning love and courtship is, therefore, derived from the fictions of poetry or the high-wrought description of novels.

This work portrays the delights of this master passion, and shows how to preserve it in its purity and to enjoy the happiness which it affords. What should be known by those about to marry and by the newly married gives peculiar value to this work and renders it an indispensable companion in every home.

There is a strong prejudice against the discussion of this subject, and when the peculiar delicacy attending it is considered, we cannot wonder why such a prejudice should exist. Even the most chaste and refined observations are apt to give offence; or, at least, to excite alarm in a sensitive mind. The delicacy and the difficulty of the subject we admit; but we ask, is it not preposterous, is it not ruinous to the best interests of mankind to leave the whole discussion of this delicate subject to men of loose and abandoned character?

Is it wise to leave young persons to derive their notions of love and courtship from the exaggerated, false and misleading descriptions with which modern literature abounds? Do not these deceptions daily seduce, mislead and corrupt thousands of the young, thoughtless and inexperienced?

Is it not infinitely better, then, that we should innovate a little on the opinions, and feelings, and, as we think, prejudices of the world,

and break that mysterious and profound silence which regards the discussion of this topic as either indecorous or mischievous?

Therefore, every female should be familiar with the mysteries of her organism, and seek to arrest those abnormal influences which tend to the detriment of her natural vigor and perfection. She should know when and whom to marry—when and how often to bear children. She should be the guardian of her own procreative functions, and the right to refuse sexual commerce when considered repugnant to the instincts of Nature, or when found inimical to her health, beauty and longevity; she should have the option to bring only lovely and healthy offspring into existence, while she should be taught to look upon sickly and malformed issue as a crime against Nature, and a grevious offense in the sight of mankind.

To facilitate such humane and philanthropic purpose—to elevate the sex to her rightful and natural position from the degraded creature of man's lusts and caprices—to show her how she may retain her loveliness and physical and mental powers to the latest period of human life—and at the same time improve the future races of man, by reformatory and recuperative elements bearing upon the present generation of men and women, worthy of the consideration of every true lover and friend of our species.

For this end this work was written. Accordingly the authors would have their views and sentiments deliberately weighed, and judgment passed upon their performance as it may be deemed beneficial or prejudical to the general well-being of society.

They sincerely believe with the Sacred Text, "*That righteousness exalteth a nation, and that sin is a reproach to any people.*" They would especially inculcate the purest virtue and morality, and frown down everything partaking of the prurient, sensual and revolting. They would save the race from utter debasement, degeneracy and extinction, and replenish the earth with an order of humanity of the highest physical development and the most transcendant intellectual and spiritual attributes, and thus restore the human creature to his destined position of an Angel of Light, created and fashioned in the image of Deity, the Great Father and Ruler of universal physical and spiritual existences.

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THE GUARDIAN ANGEL

CHARM OF BEAUTY AND SUPERB WOMANHOOD.

GOD'S GREATEST AND BEST CREATION IS A TRUE, PURE WOMAN.

SHE SMILES AND SMILES AND WILL NOT SIGH,
WHILE WE FOR HOPELESS PASSION DIE;
YET SHE COULD LOVE, THOSE EYES DECLARE,
WERE BUT MEN NOBLER THAN THEY ARE.

"ETERNAL SMILES HER LOVELINESS BETRAY
AS WOODLAND STREAMS RUN DIMPLING ALL THE WAY."

"IT IS NOT WHILE BEAUTY AND YOUTH ARE THINE OWN,
AND THY CHEEKS UNPROFANED BY A TEAR,
THAT THE FERVOR AND FAITH OF THY SOUL MAY BE KNOWN,
TO WHICH TIME WILL BUT MAKE THEE MORE DEAR."

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A MODERN VENUS.

"SHE WALKS IN BEAUTY LIKE THE NIGHT
OF CLOUDLESS CLIMES AND STARRY SKIES,
AND ALL THAT'S BEST OF DARK AND BRIGHT
MEETS IN HER ASPECT AND HER EYES."

THE POWER OF QUEENLY WOMAN.

IN THE PRIVACY OF THE HOME, SCREENED FROM PUBLIC GAZE, WOMAN TOUCHES THE SPRINGS OF ACTION THAT MOVE THE WORLD.

SWEET INNOCENCE APPEALS TO WOMAN'S LOVE,
THAT JEWEL OF HER QUEENLY MIND,
AND TELLS HOW NOBLE IS THE HEART,
THAT PITIES AND IS EVER KIND.

MAID OF ATHENS, ERE WE PART,
GIVE, O GIVE ME BACK MY HEART.

LORD BYRON.

"FAIR AS THE NOONDAY IS HER FACE."

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ART OF DRESSING THE HANDS.

WOMAN'S DRESS REQUIRES THAT SPECIAL ATTENTION BE GIVEN TO THE COVERING OF THE HANDS, WHICH SHOULD BE ADAPTED TO THE SEASON, AND SHOULD COMPRISE ALL THE ADORNMENTS INVENTED FOR THIS PART OF FEMALE ATTIRE.

FINELY DEVELOPED CHEST AND ARMS.

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MASSAGE OF THE NECK AND CHEST.

MASSAGE DEVELOPS AND BEAUTIFIES EVERY PART OF THE BODY TO WHICH IT IS APPLIED.

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THE MORNING TOILETTE.

FRICTION WITH A TOWEL PROMOTES THE HEALTH OF THE SKIN, IMPARTS A GLOW TO THE CHEEKS, AIDS THE ACTION OF THE LUNGS AND HEART, AND IS AN INDISPENSABLE ADJUNCT TO THOSE EXERCISES WHICH GIVE TONE AND STRENGTH TO THE WHOLE SYSTEM.

BLOOM OF BEAUTY AND HEALTH.

"EYES THAT FEEL AND SPEAK."

THE MOST IMPORTANT OF HUMAN ORGANS OF SENSE.

COURTSHIP AND MARRIAGE

CHAPTER I.

COURTSHIP, in which the gentleman does the agreeable, is a very pleasant thing. It is so delightful in itself that many persons never go further. It consists in much billing and cooing, in serenading, and in walks by the lonely lake, or unfrequented path, in the moonlight stroll upon the lawn, or the whispered conversation in the recess of the window, in interchanges of love, eternal fidelity, etc. Love makes all harmonize. The coy maiden, it is true, will be very shy for a while, but "faint heart never won fair lady."

Yes, a certain brisk confidence must be assumed, for a lady delights in an ardent lover, and many such have triumphed when others have failed. For this reason, perhaps, successful villains, who have much practice in the wiles that gain woman's heart, are more likely to gain their ends than he who truly loves, but is deterred by bashfulness; while, in many cases, woman has loved "not wisely but too well." Yea, under the fairest pretenses, women have been deceived, and under a promise of marriage have permitted the familiarities which prudence, virtue and custom alike reserve for the marriage state. Thus, many a fair confiding girl is lost to purity, virtue and happiness, and robbed by a heartless villain of all that is most dear to woman, while she might have shone as a star in society.

Courtship is a perilous period, inasmuch as human nature is not altogether perfect. Many there are who have begun well. They have continued to do well for days and months, or perhaps for years; but at length giving way to a momentary impulse, the saddest of all accidents has occurred, and such as cannot be repaired. Let no one think that we exaggerate. Courtship is but a thorny state after all. It has three stages. The first when the parties meet, and ogling interchange of glances, and a few hurried words take place. The second, when the whole frame thrills with the exquisitely delicious and melting emotion of the *first kiss!* when the engagement ring is placed on the finger.

The third, is that in which "the consummation so devoutly to be wished," by plighted lovers who long for the wedding day and the sweets of dear felicitous love in the marriage state.

The first two stages are attended with many hours of pleasure and few moments of pain—many enchanting meetings and regretful partings The third stage is not without danger, and should be pushed on to a conclusion as rapidly as circumstances will allow.

LOOK BEFORE YOU LEAP.

In courtship, there should be a great degree of respect paid to each other by the affianced parties, who are one day to become man and wife. They should "look before they leap," count all the cost, and have their minds fully made up, to all the consequences and responsibilities which the married state involves. They naturally will think that all is to be joy and gladness, peace and "bliss—exquisite bliss," in the possession of each other.

Experience, however, has shown to many, that happiness is not a plant of quick growth, and many who might have averted it, with prudent foresight, have had to lament an ill-assorted marriage ere the "honey-moon" had waned. Otherwise, and upon the whole, perhaps courtship is a state of much felicity, and one which the wedded pair will look back to with delight, if in it they have had mutual respect and esteem, and still maintain the integrity of such true sentiments and fidelity. Thus the enjoyment of reciprocal love is full of bliss on the threshold of matrimony which is yet an unexplored region.

This constitutes courtship. Hence, the first step must be made by the man, for the initiative should not be taken by the fair lady, for it is indelicate, unusual and unnatural, except perhaps in Leap Year! The

male must woo, while the lady must be wooed in order to be won. Madame de Stael, speaking of courtship, says:—

"How enchanting is the first gleam of intelligence with her we love! Before memory comes in to share with hope, before words have expressed the sentiments, before eloquence has been able to paint what we feel, there is in these first moments a certain kind of tumult and mystery in the imagination, more transitory than happiness, but still more heavenly."

Marriage is a natural, religious, civil, and legal contract, wisely instituted for the happiness of mankind.

Man was born for society; his condition, faculties, and propensities require that he should associate with other men. At every period of his life he stands in need, and wants the assistance of others. If we look to the infantile state, we observe that the new-born babe cannot long exist unless by the sedulous care of its parents or others, who protect, clothe, and nourish it. Were it left naked on the ground, exposed to the inclemency of the air, destroyed by hunger, or left a prey to ferocious animals, it must speedily perish. If we follow it through childhood, we find, that, unless it is directed by the advice of others of its species and assisted by them, it would be little better than an irrational animal.

POWER OF GENERATION.

When the human being arrives at the adult age, he possesses the power of generation, and is bound to protect, support, and cherish the individual who co-operates with him, in perpetuating his species; and hence originates society.

Finally, when old age commences, the same imbecility, the same infirmity recurs as in infancy; therefore, if society did not exist, the human being would fall to the ground, would be affected with various diseases, unalleviated by remedies, he could have no food, and must be destroyed by hunger.

It therefore follows, that the condition of man, at all periods of life, requires the care of his fellow creatures. His faculties, reason, senses, voice, gestures, and capacity for learning the arts and sciences, require the benefits of civil society. The offices, by which we are bound to all other men, arise from the duties of humanity, or draw their origin from society.

Domestic society is that which exists between certain individuals, who, by relationship, or contrast, form one family, which is necessary to

man, and was destined for him by nature; for, without this, the human race could not be propagated or preserved. Domestic society is again divided into conjugal, paternal, and filial.

Conjugal society is a perpetual compact between man and woman to live together in mutual love and friendship, and to aid each other by mutual succor for the course of life. The diversity of the sexes was instituted for this purpose; and there is an innate desire implanted in both to perpetuate their species, their nature, and to transfer their property to their children.

A PROPOSAL—WHAT SHALL THE ANSWER BE?

Marriage was instituted by the Divine Creator in the time of man's primitive innocence, as the means of his happiness, and the perpetuation of his race. The wisdom of its institution has been felt and acknowledged in every age. Man found by experience it was not good for him to be alone, or to lead a life of celibacy or isolated selfishness. Marriage does not, however, restrict its beneficial influence to individuals, but extends to states and kingdoms. "It is," says Jeremy Taylor, "the mother of the world, and preserves kingdoms, and fills cities, churches, and even heaven itself." It is the primitive source

of morals and of society, and offers incalculable securities to governments. It presents matter of important consideration to the statesman, the divine, the lawyer and the physician.

Of all the social institutions, there is none which exercises so great an influence upon states as marriage. Every state is composed of families, and these are the result of conjugal unions. The prosperity of a nation depends upon the strength and vigor of its inhabitants, which are powerfully influenced by the comparative perfection of the marriage and bastardy laws. These again have great effect on the morals and civilization of society, the rights of persons and property; and even sceptres and thrones are alike dependent upon them.

It was, therefore, wisely ordained that marriage should be a sacred compact, for which those engaging in it should forsake their nearest relations and friends. The parties contracting it form the strictest union and nearest relation that can be established between two individuals; their temporal concerns are identical, and consequently marriage is universally considered the source of the greatest comfort and most perfect enjoyment on earth, securing all the advantages of sincere friendship, and the reciprocal offices of true and tender affection. The parties entering into this state, vow mutual love, fidelity, and friendship.

PHYSICAL AND MORAL EDUCATION OF CHILDREN.

It was therefore most wisely ordained in the beginning of time, that "a man shall leave his father and mother, and shall cleave to his wife, and they shall be two in one flesh." The only motive that virtue allows, besides the selection of an individual of the opposite sex, for the mutual succor necessary in the management of the affairs of life, are the perpetuation of the species, and the physical and moral education of children, so that they may enjoy health, render due homage and reverence to the omnipotent and beneficent Author of the universe, and become useful members of the human family.

Marriage was originally instituted between the first of the human species, as a religious, political, civil, and moral contract of Divine ordinance. Man is a rational and social being, deriving his chief earthly happiness from the delights of society, and the interchange of thought. It is the interchange of the charities and the sympathies of life which gives to human existence its real and only value. Hence, man in a state of solitude, or even isolated luxury or affluence, would be the most pitiable

and miserable of creatures. Exposed to the corroding cares, sorrows, bitter disappointments, and misfortunes of life, man cannot brave alone, and unbefriended, the ingratitude, envy, and malevolence of the world.

The perfection and sincerity of friendship can only be found in the marriage state, where an identity of interest shuts out all petty jealousies and vexations, and a unity of thought, sentiment, feeling, and conduct, exists. The qualities essential to conjugal happiness are chiefly of a mental or moral nature, and not merely of a physical kind, as is unfortunately too generally the case.

Marriage was instituted between the first of our species as a natural, civil, and religious contract, and has ever since been celebrated with a degree of solemnity and importance, suitable to its dignity. It is a sacred compact, for which those entering into it, forsake their nearest relations and best friends. A mutual love should subsist between them, a mutual charity to bear reciprocally their natural defects, tempers, and all other inconveniences and infirmities of life.

FIDELITY TO EACH OTHER.

They mutually vow to observe an inviolable fidelity to each other; they are bound to labor with indefatigable industry so as to augment their means for the sustenance and education of their future offspring, and to provide for themselves in their infirmities and old age. "Love," says Virey, "is the basis of all association, and consequently of human civilization: libertinage, which ruins love, attacks sociality, whilst good morals, on the contrary, cement the edifice."

It is not enough that children should be procreated by parents: they are also to be nourished, clothed, and educated; they should be nourished by the milk of the mother, and not delivered to other women, unless in certain cases, for nature generally gives the parent the gift required for this purpose; and she never can morally, unless this is withheld, or unless there is dangerous infirmity or some great cause, afford to omit it: for by the neglect of this sacred duty, the offspring suffers not only great inconveniences, but often loss of health and life, and the mother herself becomes liable to diseases, or propagates unhealthy offspring.

It is well known that when children are committed to the care of mercenary nurses, maternal love and tenderness diminish, or almost cease; whilst infantile affection is naturally bestowed on another individual, and finally it scarcely exists towards the parent.

It is likewise an indispensable obligation on parents, that they inform their children, by word and example, of the existence, culture, and love of the Deity, for in infancy we are most tenacious of perceptions; and the greatest care should be taken that children do not see, hear, or read, unless what is good and right, because their early impressions generally continue to old age. For this reason they ought to be kept, as much as possible, from the society of servants. Nothing is more tender, flexible, or susceptible of impressions than the minds of children. There is, therefore, great danger lest they be contaminated by indecorous,

THE MARRIAGE CEREMONY.

profane, and obscene ideas. Every one knows the force and truth of this statement, and can verify it in everyday life.

Parents should also take care that their children are kept from idleness, the root of all evil, and that at a proper age they are initiated into the principles of literature, the arts, and sciences most suited to or even above their sphere of life. When they arrive at the adult age, and become members of society, they are expected to discharge their social duties in their station in life.

The proper age of marriage, according to the law of this country, is twenty-one for the male, and eighteen for the female; but many physiologists are of the opinion that the ages of twenty-five and twenty-one would more accord with the complete development of adults. Buffon held this

position, "the natural state of man after puberity is marriage;" but this is evidently untenable, because the human body is not fully developed at this period of life, the different functions are not perfect, and as the organs are only in the progress of their growth, the offspring would be infirm and delicate; and the sexes totally incompetent to perform the various important duties of parents. It is at, or rather after the adult age, that the mind and body have arrived at perfection; and therefore moralists and legislators have fixed this age as the best for marriage.

The ancient Germans did not marry until the twenty-fourth or twenty-fifth year, previous to which they observed the most rigid chastity; and in consequence of which their offspring acquired a size and strength that excited the astonishment of Europe. Cæsar said that the Germans of his time, under twenty years of age, were like women, and hence their youth allowed time for their growth, and gave their bodies large dimensions. It is impossible, perhaps, to fix the exact period proper for conjugal union in all cases, because there is so great a difference in the growth of individuals, some being more developed at eighteen or twenty than others at twenty-five.

PARENTS AT A VERY EARLY AGE.

Some girls have been mothers at the twelfth year and a half of their ages; and indeed I have attended a labor case of this kind, and have heard and read of many others. I have been repeatedly told by mothers that their daughters were parents at the age of thirteen and fourteen years.

The evils resulting from too early marriages are, diminished growth and strength of the male, delicate and bad health of the female, premature old age, or death of either or both, and a feeble, infirm, and diseased or orphan offspring.

It has long been observed by all physicians, that persons advanced in life, provided they are healthful and vigorous, and have observed strict continence, procreate much more vigorous infants than the debilitated young, who have injured their constitutions; for, as one of my distinguished correspondents, Professor Dewees, judiciously remarks, "it is oftentimes better to be old in years than in constitution." This learned physician also observes, that feeble parents may propagate robust children, but these, according to his experience, which is that of more than thirty years, seldom survive beyond the age of manhood, and old age is out of the question.

We see the truth of this statement verified every day: we have only to observe the many delicate mothers who daily present their children at our hospitals and dispensaries, emaciated and often dying, who generally inform us that for some months after birth it was impossible to behold more robust, or finer infants. I have long noticed this fact in hospital and dispensary practice, and have repeatedly pointed it out to medical students.

There is another position maintained by the profession worthy of attention, viz.: that persons who attain extreme old age, often marry and have children. It is true that women in general lose the faculty of conception from the age of forty-five to fifty years in this climate; but some attain the function of maturity much later.

OLD WOMEN WHO BECAME MOTHERS.

Pliny states, that Cornelia, one of the family of the Scipios, gave birth to Valerius Saturninus, at the age of sixty-two. Valescus, of Tarentum, attended a woman in labor at sixty-seven years of age. The illustrious and indefatigable Haller mentions the case of a woman who was delivered at sixty-three, and of another at seventy. All these authors observe that the women whose cases they mention, had menstruated regularly, and were not liable to greater inconveniences than those of that time.

It was, in my opinion, fully as rational to mention this conclusion, as to deny the possibility of conception after the age of sixty;—indeed, I believe much more so. Nature has equally endowed both sexes with organs and functions; and though she has been more bounteous to man, it still remains to be proved whether she has established great disparity in the sexual functions.

Medical practitioners are often consulted by individuals, who are anxious to know whether marriage is, or is not conducive to health and longevity. It is now universally admitted, that an answer in the affirmative ought to be given to all healthful and well-formed individuals of the male sex, from the adult age to the sixty-fifth year, and sometimes even later. Longevity, however, does not depend upon the benefit of proper regimen alone, but on the degree of vitality which is transmitted by parents. An individual born of healthful and robust parents ought naturally to expect a long life; but one whose parents are delicate, feeble, or aged, or affected with scrofula, syphilis, gout, pulmonary consumption,

distorted spine, or calculous diseases, will have a delicate and infirm constitution.

Hufeland lays down the following precepts on the subject of marriage:

1st. "A person should not marry unless into a family remarkable for longevity," and, he should have added, free from certain hereditary diseases.

2d. He should not marry a woman advanced in life, delicate, feeble- or affected with any deformity or disease, more especially those trans, missible by generation, as gout, stone in the bladder, gravel, herpes, certain diseases of the skin, syphilis, scrofula, mania, or hæmorrhoids.

3d. The age most proper for women is eighteen years, and for men twenty-four or five.

4th. They must not give themselves to the pleasures of reproduction except when the natural impulse is strong, and above all things, avoid propagation during drunkenness.

5th. Every pregnant woman ought to be considered as a laboratory, in which she prepares a new being, to which the slightest physical or moral emotion is injurious.

6th. Women of a nervous temperament, those who are very irritable, nervous, hysterical, subject to convulsions, or epilepsy, ought to avoid matrimony, as they will give birth to infants who can live but for a short time.

This last precept is liable to exception, because nervous and hysterical women are often cured by marriage, and may have healthful infants, as I have frequently known.

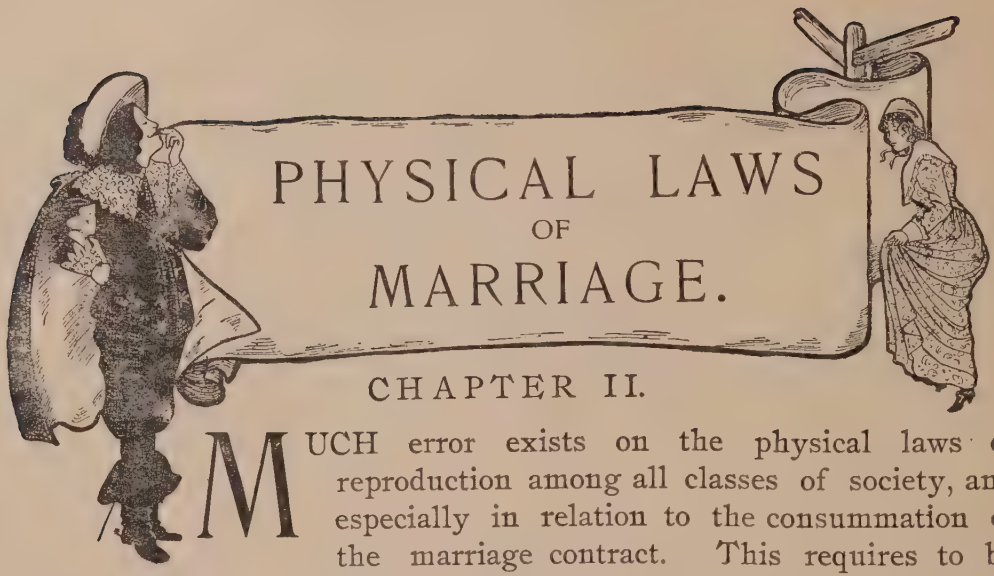
Whenever medical practitioners are consulted as to the propriety of marriage, they ought to recollect, that they touch a delicate chord of affections, that man is more than a machine, so that they should combine moral with physical medicine—that science of the heart and mind, with which all the learned and well-informed of the profession are well acquainted.

There are many infirmities which are not sufficient to prevent married persons from affording each other mutual succor, and are no bar to conjugal union; but there are others which totally disqualify persons from engaging in this contract—such as malformations and incurable diseases of the genital organs.

Every individual who entertains a doubt as to his capabilities for generation, is anxious to obtain medical advice on his condition; and it is

much to be regretted that it is too often the practice of the profession to treat the matter with levity or derision. Hence few of the faculty are consulted, an unreserved disclosure of the symptoms is seldom given, and the inquirer is often fearful that his condition may be made known to his acquaintances. Every duly educated physician is bound to secrecy, in all delicate matters, and so far from treating his patient with levity or carelessness, should consider his case as attentively as any other that may come before him. Were this line of conduct generally adopted by the medical profession, an immense number of the public would not be driven to seek advice from low, ignorant, and unprincipled empirics, who not only defraud them of immense sums of money, but also destroy, what is far more important, their health.

The period has at length arrived when sexual diseases obtain as much attention as any other class of infirmities, and when the most distinguished medical practitioners devote themselves to their study and treatment.



PHYSICAL LAWS OF MARRIAGE.

CHAPTER II.

MUCH error exists on the physical laws of reproduction among all classes of society, and especially in relation to the consummation of the marriage contract. This requires to be exposed with all the delicacy of which the subject admits, and the precision necessary and privileged in medical works.

The consummation of marriage ought to be effected with gentleness and moderation, and not with unrestrained impetuosity, as among brute animals; for if it is accomplished with violence, more or less severe pain, laceration, effusion of blood, with inflammation of the external and internal genital organs, will be frequently induced. All obstetric authors, and all writers on medical jurisprudence, attest the truth of this statement.

Every experienced medical practitioner is aware, that in cases of female violation, more or less contusion, laceration, hemorrhage, and inflammation are produced, more especially in cases of very young persons, and when there is much disproportion between the age and development of the individuals.

When most of these diseases are induced, they are aggravated by the frequent repetition of the cause which excited them, it occasions excruciating pains, and generally produces sterility and bad health.

There is nothing more certain than that precipitation and impetuosity in the consummation of marriage often causes, in the very young or aged individuals, exquisite pain, from contusion, laceration, etc.; and these evils result more from sensual passion than the legitimate object, the propagation of the species. In farther support of this opinion I may add, that the Jews and many ancients maintained, that the consummation of marriage ought to be characterized by the effusion of blood; and this

is generally the case, but there are many exceptions, as when leucorrhœa or other mucous discharges are present, which relax the external genitals and destroy the hymen. In these last cases, there may be no effusion of blood, on the consummation of marriage, though the individual is a virgin—a fact well known to every scientific and practical obstetrician and medical practitioner.

It is also well known that pregnancy has occurred and the hymen perfect. Again, a woman may be delivered and such cohesion occur soon after as to totally impede sexual commerce; and in certain cases there will be copious effusion of blood. In fine, the most respectable medical authors have been unable to determine whether women who have been depraved twenty or more years, were not virgins, as the presence or absence of the hymen is no real proof of virginity. This is the universal opinion of scientific and learned physicians in all countries. This conclusion has enabled me on many occasions to prevent conjugal separations and divorces, and restore domestic happiness. I hold it as an axiom, that it is the duty of every author to inform his species as much as possible, and thereby to give information, diffuse knowledge, dissipate ignorance, and familiarize truth and science.

CONDITIONS FOR HEALTHFUL OFFSPRING.

It is also a general conclusion among physiologists, that repeated conjugal intimacy within a few hours is unprolific, and a mere animal gratification. Abstinence for one or more days, and tolerably good health, are necessary to most individuals for procreation of healthful offspring. According to most physiologists, morning is the best time for reproduction, that is, after the fatigues of the preceding day are dissipated by repose, and when the majority of healthful individuals possess most virility.

As the hygienic precepts relative to the generative function are deeply interesting to most individuals, they may be slightly noticed.

1. It should never be indulged in until there is a natural desire and vigorous impulse; and seldom, if ever, before the adult age.

2. It ought to be avoided whenever it produces more than temporary depression of spirits, or the least debility of the moral, intellectual, or physical states, also during intoxication, mania, and when there is venereal or any other disease of the sexual organs of either party.

3. It ought to be used in moderation, when the individual makes

much mental or corporeal exertion, or during recovery from any severe disease, when there is a state of debility, or when restorative aliment cannot be procured.

4. It ought to be entirely abstained from during the presence of the menses, the child-bed evacuation, which continues for nine, twelve or more days after delivery, and only used moderately and occasionally during pregnancy and suckling. It ought to be avoided in all painful diseases of the generative organs. It is also particularly injurious immediately after taking food, and until digestion is completed, which is from two to three hours afterwards.

There can be no rule laid down as to the proper exercise of this function, as this will depend on age, habit, occupation, situation, climate,

THE RIVER OF LIFE.

season, aliment, and numerous other moral, physical, and external influences, which are capable of modifying this function.

Every pregnant woman is the depository of a new and feeble being, at first imperceptible to the human eye, though the future statesman, philosopher, or emperor, and which is powerfully, though indirectly, influenced by the moral and physical conditions of the mother, or by her state of mind or body. I shall, hereafter, minutely describe the hygiene, or precepts for the preservation of female health before marriage, with a view to woman's well-being, as well as that of her offspring, and those relative to the function of reproduction, pregnancy, parturition, the child-bed condition, and lactation or suckling.

It would occupy by far too much space in a work of this kind were I to discuss fully the various topics connected with this part of the subject, as the motives which influence matrimonial contracts, the true source of human happiness, of vigorous offspring, and of a moral state

of society. These, and many other questions relating to reproduction, are referred to the moralist and legislator, although they have the most powerful influence on the health of parents and their children; and on this ground I shall briefly notice them as a physician.

The motives which influence the majority of the world in contracting matrimonial unions, are generally false, selfish, and most detrimental to the procreation of sound and vigorous offspring; such as ambition, wealth, rank, title, interest, a love of independence, of an establishment, a desire to escape parental restraint, anger, a determination to disinherit relations, disdain for a faithless lover or mistress, necessity, obligation, passion, imitation, and very rarely the only proper motive, pure and virtuous affection. It is also generally admitted that parental authority cannot reasonably or morally compel alliances when the inclination of the individual most concerned is opposed; although we see too many forced and unhappy marriages which are to be ascribed to this cause.

POWER OF CONJUGAL LOVE.

It is scarcely necessary to observe, that love is implanted by the Deity in human beings, all grades of mankind have felt the power of this passion—it is the same in all, or, more strictly speaking, in almost all, for it is alleged that some few have never felt its influence. It is equally powerful in the palace and in the cottage; it is universal, or very nearly so; it glows in almost every breast, and it has been sung by the sweetest bards of ancient and modern times. Its power so strongly attaches two individuals, that no human law or intervention can separate them; for though united to others, they never can be happy, nor their offspring vigorous.

As a general rule it may also be laid down, that parties about to contract matrimonial unions ought to be of the adult age, and in good health. Man and woman ought naturally to perform the act of marriage when the body has acquired all the development of which it is susceptible. Nature always tends to perfection in all her operations, and assuredly a feeble being and one imperfectly grown, cannot be the source of a sound and vigorous generation; while, at the same time, the premature exercise of certain functions essentially debilitating even to individuals fully developed, cannot but remarkably retard the growth and vigor of persons under the adult age, when carried to excess.

Premature, ill-assorted, and late marriages, are highly injurious to

the procreation of vigorous and healthful infants, and to public morals. It is also a fact, that premature exertion of the generative function is most injurious to the health of the individual and offspring. Agriculturists are so well aware of this fact, that they invariably prevent the premature intercourse of the inferior animals.

It is also right to state, that there ought not to be an extreme disproportion in stature between those who engage in matrimonal unions. A delicate, slightly-formed, small woman, whose pelvis is small, ought to hesitate in marrying a large robust individual, as the offspring will be large, produce great suffering in coming into the world, frequently require the use of artificial aid, and sometimes mutilation, while the health and life of the mother may be injured and destroyed. This is the fate of many girls of small stature, who are seduced to become mothers at an early age, as twelve or fifteen years, and of those from thirty-five to forty, both of whom generally purchase the pleasures of maternity at a very dear rate. The hip and other bones which form the cavity through which the infant has to pass into the world are not sufficiently developed in extreme youth ; and the ligaments and muscles which cover them are rigid after the age of thirty-five, in most women.

DISPROPORTION OF ORGANS.

When there is a great disproportion between the reproductive organs, the generative function cannot be performed. Thus, excessive size, thickness, or length of the virile member, may render sexual intimacy excessively painful, or indeed impossible for some time, with very young persons, or those of small stature.

I have also been repeatedly assured that sexual approach had been productive of pain for two and three months after marriage. Infecundity was the result in some cases, and sometimes inflammation of the womb, which was succeeded by painful menstruation, barrenness, and finally by cancer, or some of the many other ulcerations of the internal or external genitals.

With respect to the extreme narrowness of the vulva, if there be the slightest aperture, conception may happen, and the vagina dilate spontaneously during pregnancy, or it may be dilated by instruments or incision.

It is a fact that the genital function is as imperious in the human species, at a certain period of life, as the digestive, but ought to be exerted

at all times with moderation, to preserve health, and procreate healthful new beings. It is well known that rigid continence is seldom observed about the age of puberty, and for years afterwards by the male sex, as the accumulation of the seminal fluid in its receptacles will excite the whole of the genital organs during walking and sleep, and often terminate by spontaneous and involuntary emissions. These, when frequent, as well as all venereal excesses, disorder the mind and body, induce sadness, ennui, disgust at life, extreme lowness of spirits, melancholy, and even loss of reason; whilst natural sexual enjoyment excites and exhilarates vitality, improves the mental faculties and corporal functions.

It is also important to state, that the baneful habit of exciting the organs under consideration, often arises from disease or a morbid state of remote tissues, at an age when amorous impulse cannot exist, and this self-abuse is too often continued until the adult age.

IRRITATION OF MUCOUS MEMBRANE.

Infants at the breast, whose sexual organs are so imperfectly developed, and who can have no sexual desire whatever, often contract the habit of frequently touching these parts. This apparent phenomenon is easily explained by physiology. The sexual organs are lined by a mucous membrane, similar to that which covers the lips, throat, intestines, and lungs; and irritation in any point of this membrane may derange every part of the body, which is covered or lined by a continuation of it. There are few infants who do not suffer from irritation in some part of this membrane, induced by numerous causes, as teething, improper food, or cold; and the effect will be irritation or inflammation in the eyes, ears, nostrils, throat, lungs, or stomach and bowels, and also in the genital passages, as every one of these parts is covered by mucous membrane.

But the habit of touching the genital organs acquired in infancy, often continues to the age of puberty, when these parts become more developed and highly sensitive, and render it almost inevitable. In other, and unfortunately in most cases, this habit is learned by example or intuition, more especially by allowing grown persons or adults to sleep with children, or by the depravity of some who have the care of children and youth, as servants, ushers, or tutors in schools or families, or those contaminated by it. The bad effects of it on health, on the mind and body, and especially on the source of human existence, have been forcibly described by physicians of all ages and countries.

It was held, by some writers, that the age of puberty was intended for marriage; that animals copulate at this age, and that therefore nature points out this time for propagation.

In reply it is urged, with more reason, that neither the mind nor body of man has acquired its perfectibility for many years after puberty; and that the sexes at this age could not perform all the duties of parents efficiently. Common sense and observation are opposed to the opinion, that a giddy youth at the age of puberty, with down on his chin, could communicate a perfect vitality to offspring, or discharge the paternal duties required for the physical education of infants.

The same objection may be urged against a girl at puberty becoming a mother; and, in addition, that the disorders of pregnancy, the fatigues of labor and of suckling, would be much more than her constitution could sustain. Conjugal unions at this age, before the moral and physical states are developed, would also be influenced by impetuous and ungovernable passion, and the facilities of prolonging it would lead to satiety disgust, debility, and sterility.

EVILS OF VERY EARLY MARRIAGES.

Early marriages are admitted, by moralists and physiologists, to be serious evils. The author of "Marriage" makes the following very judicious remarks on the subject:—

"Very early marriage is, in our opinion, a serious evil. Acting under the impulse of headstrong passions, or caprice, or dissatisfaction, young persons too often prematurely rush, thoughtlessly and blindly, into engagements which, in after life, become matters of deep and painful regret. The fairy visions of love's paradise now vanish; and the sober realities of life, its cares, its difficulties, and its positive evils soon lead to discontent, heartless repinings, and, worse than all, to a growing mutual indifference. Would that such cases were either rare, or only speculative; but the fact is otherwise. No wonder that families are ill-governed, children ill-managed and their affairs ill-directed, when the helm is intrusted to unskilful and inexperienced hands.

"Is it possible, we would ask, that wives of sixteen, or eighteen years of age, should possess that discretion, prudence, and wisdom so essential to enable them to govern households, rear children, and form their tempers, and their principles? It would be well if young wives were humble and modest enough to place themselves under the guidance and direction

of some prudent well-informed matron, as their friend and mentor. But of this enough. A settlement in life offers an immediate exaltation in public opinion, independent of moral worth, or virtuous conduct. It is a rank obtained without exertion, and preserved, too often, independent of virtue.

"From these observations we are unwilling that it should be supposed that we advocate marriages deferred till fortune shall have been acquired, or rank attained. On the contrary, we believe that such marriages seldom realize the anticipations which are formed of them. If an age must be stated below which marriages ought not to be contracted, we would fix it at twenty-five for men, and twenty-one for the female sex.

EVILS OF VERY LATE MARRIAGES.

"This would find each party in the full vigor of their energies, with some moderate acquaintance with the world; and with some experience and discretion in the management and guidance of family affairs. When marriage is unreasonably deferred, the heart, losing the elasticity of youthful ardor and hope becomes blunted by the vexations and disappointments of life, and is seldom the subject of disinterested love, and genuine affection. The tastes, habits, and feelings, then settled and fixed, are little disposed to accommodate themselves to the peculiarities of others."

The assertion is not true, that animals copulate precociously; those in a state of nature seldom do, and the few that are domesticated are the exceptions. The ancient legislators and philosophers opposed early marriages. The laws of Lycurgus enacted that men should not marry before the age of thirty-seven, and women not before the age of seventeen years. Xenophon and Plutarch explain the spirit of these laws, on the grounds that they were intended to secure the most vigorous offspring, and powerful population. Aristotle held that a husband ought to be twenty years older than a wife: he ought to have said ten, as the former disparity is now properly considered too great.

Late marriages are also highly detrimental to the welfare of society, and especially those between persons of a very advanced age. Fecundity cannot follow after the woman has ceased to menstruate; but there is no age at which we can declare man to be absolutely sterile. These facts do not, however, oppose the general rule as to the proper age for marriage, though a man or woman at a very advanced age cannot fulfil the real end

of this union, the procreation and physical education of the species. Thus when two aged persons, deprived of the faculties necessary for generation, marry for the purpose of affording mutual cares in old age, and sweetening the last years of life, there is no inconvenience to society, except that of favoring celibacy, and deferring conjugal union to a period when it is useless to population.

But when the woman is not beyond the term of fecundity, the consequences of late marriages are often very serious. She may be barren, which is frequently the case, or she may become pregnant at a period of life when the rigidity of her fibres may not readily yield to the efforts of parturition. Such is often the condition of women between the age of thirty-five and forty: they suffer severely during a first labor, their lives are endangered, and often destroyed. If they become mothers, their offspring is often extremely debilitated, or when the parent is still more advanced in age, her infant is often destroyed at the portal of life, or, if born, it inherits the languor of its progenitors, it becomes an orphan before it is reared, it remains a charge to the public, if there is not a property left to render it independent.

PHYSICAL DEBILITY OF INFANTS.

When marriages are contracted between persons of a disproportionate age, they are usually followed by great immorality. The power of fecundity ceases with one party, while it is continued with the other. These unions, therefore, give fewer infants at one time than at another. It is also a matter of observation, that in many instances young women bear no children when united to old men, though they often become mothers on future marriages. Another evil consequence of this class of late and ill-sorted marriages is the physical debility of infants; for the youth of the mother is counterbalanced by the languor of the father.

Conjugal union between a young man and an aged woman causes bad effects upon the social order, for it is a kind of sanction for concubinage. Man can engender to an old age, but woman is sterile after the cessation of the menstrual function. These marriages generally take place on account of pecuniary, or other worldly considerations; they lead the husband to debauchery, and the wife to all the excesses of jealousy. They are, therefore, injurious to society, and to the increase of the population.

The laws of ancient nations on late marriages merit notice. In Sparta, when a woman brought a fortune to an aged and impotent man, he was

compelled to permit her to choose an adjunct to his family. According to the Roman law in the reign of Augustus, men who were more advanced in life than sixty years, and women than fifty, were not allowed to form matrimonial unions. Numerous other examples might be given of laws against late marriages.

Conjugal unions should be entered into with the natural liberty of choice. Young persons form attachments which neither parental authority nor any other consideration can prevent or destroy. But as a general rule, the consent of parents ought to be obtained; and it never should be withheld when there is mutual love and affection, and an adequate support for the parties and their offspring. Parents often refuse consent on the score of interest, ambition, rank, family connection and lucre, and compel their offspring to marry against their own inclinations.

TRANSMISSION OF DISEASE.

It has been long remarked that old men generally beget infirm, delicate infants, as well as those persons who are affected with syphilis, scrofula, gout, phthisis, etc. These, and many other diseases, are transmitted to the offspring. Every one knows that children generally resemble their parents in features, limbs, and dispositions, so that the moral and physical condition of parents are also transmitted to their offspring; although in some cases family resemblances are not always the most striking.

"As parents would sin grievously who should not leave marriage to their children's free choice and deliberation, as it is their own personal engagement, so children sin morally against the respect and obedience which they owe to parents, if they marry against their consent, or without their advice, unless the parents' opposition be notoriously unjust."

There never should be a very great difference in the ages of those who are about to form conjugal unions. The authority of parents, guardians, and the conductors of schools, should be exerted over those under their care, more especially when youth have little acquaintance with the world. Inconsiderate and rash unions are often effected while young ladies are in scholastic establishments.

They should discourage visits, private interviews, and all familiarities, unless an honorable intention of marriage is declared in the presence of a competent witness, for otherwise such a line of conduct is contrary to the rules of decency, good manners, and religion, and gives scandal to others.

HAPPY AND UNHAPPY MARRIAGES.

CHAPTER III.

OF all temporal evils, an unhappy marriage is the greatest. It is the source of confusion, misery, and vice, of a bad education of children, of bad citizens, and of a violation of every duty. No one, therefore, ought to engage in this contract without the most mature deliberation and a virtuous intention.

One marries for love or sensual gratification, which he imagines will be perpetual; but this passion is soon subdued or extinguished if founded on beauty or other fading qualities. Another embraces this state for fortune, splendor, title, and so on; and he too, will, in general, be disappointed. Most persons expect happiness, pleasure, and wealth; but disappointment is the commonest result. Marriage, unless based on religion, virtue, and nature, is seldom happy.

Unsuitable marriages among persons of different ranks cause dissensions among families, and are generally unfortunate. Persons usually prefer individuals of their own age, disposition, rank, and fortune; though, from instinctive feeling and worldly motives, there are exceptions. Nothing is more dangerous than great contrasts,—than, to use the words of the poet, "the union of January and May."

Again, a masculine woman disgusts a man who compares her to himself. In like manner, an effeminate man, in place of being preferred by women, is despised. The best mode of establishing ardent love between the sexes is, that the woman should be feminine and the man masculine. If all conjugal unions were assorted after the dictates of nature, or the secret instinct of sympathy, nothing could, without doubt, be more delightful and lasting than the bonds of hymen. By these well-assorted, natural proportions, both sexes become certainly better and more perfect; the

mutual abandonment of one to the other forms one being in two bodies; it doubles the sentiments and life, cares are lessened by participation, and pleasures are rendered more vivid and exquisite.

A husband or wife who is virtuous, prudent, and well informed, will be the greatest comfort, support, and treasure. The chief characteristics of a good husband or wife are piety, love, meekness, reasonableness, application to duties and a love of home, "sweet home." It is not easy to find such individuals. A philosopher compared a man going to marry to one who was about to put his hand into a sack, in which were ninety-nine serpents and one eel; the moral of which is, that there are ninety-nine chances to one against a fortunate selection.

The first duties of the married state are mutual love and affection. This state is the closest alliance and union in hearts, bodies and concerns. Mutual fidelity is the second great conjugal duty, which those entering into matrimony vow before their Creator. A marriage, without mutual love, is the most unfortunate; for a perpetual cohabitation with one whose person and conversation are disagreeable, and who is an object of aversion, conjoined with the thought that a divorce only or death can be the deliverance, renders such a union much more uneasy than can be expressed or described.

DYSPEPTIC HUSBANDS AND SNAPPY WIVES.

Every imperfection, capricious temper, vanity, folly, etc., appear in the married state. The demeanor towards the world is agreeable and obliging; but, in domestic life, the mask is thrown off, and an individual appears such as he or she really is. Hence it is incredible how much a wife has to bear from a husband who is capricious, haughty, choleric, dyspeptic, and intractable; or what a sensible husband has to endure from a silly, unreasonable, and intractable wife.

It is difficult for married persons to acquire each other's tastes, feelings, and opinions. Patience is an indispensable virtue to this state. No one is free from imperfections, both of mind and body; and both husband and wife will have to bear with, and often to forgive, each other. Every prudent individual should endeavor to become well acquainted with the disposition of the woman whom he thinks worthy to be his companion for life, and the mother of his offspring. He should ascertain her temper and peculiarities, and decide whether they are similar or suited to his own.

A captious, peevish spirit; a mind full of suspicions, and easy of offence; a temper sour, fretful, passionate, ever on the watch to find fault and to express dissatisfaction, which no attentions can satisfy, and no efforts please; rude in its language, scornful in its expressions, and unreasonable in its requisitions, treating the old with disrespect, and the young with hauteur;—these are blights and deformities of character, for which no other qualities can adequately atone or compensate.

Nor is it only the *quality*, but the *general similarity* of temper which must be regarded. Where strong affection prevails, a spirit of accommodation will prevail also. But it is not desirable that the spirit of accommodation should be subjected to very frequent, or very rigorous experiments.

Should the wife, unfortunately, be allied to a husband of irreligious character, it is incredible how powerfully his heart may be won over to the love of Christianity by the gentle and peaceable demeanor of his wife; whose virtuous deportment, suavity of manners, and diligence in duty, united with humility and unobtrusiveness, cannot fail to render her both respected and beloved.

CARES OF MARRIED LIFE.

A fretful temper is its own tormentor, but it is also a tormentor to every one around, and to none more than to the husband, or the wife, who may be exposed to its influence. No day, no hour is secure. No incident is so trifling, but it may be wrought up into a family disturbance. If it be commanded "that all bitterness, and wrath, and anger, and clamor, be put away," surely the injunction has an increased obligation on those whose interest as well as duty it is to obey it.

The cares of married life are undoubtedly many. The husband and wife are not solitary individuals. In their welfare are bound up the comfort and well-being of many dearer to them than their own individual comfort. In them is centred the hope, and on them rest the confidence, the prosperity, and happiness of family and friends. Exposed to the daily mortifications, disappointments, and perplexities of the world, it is not marvellous if care clouds their brow, or anxiety wounds their hearts, and therefore their sorrows are numerous. They have their many conflicts with the troubles of this world; they have their corroding cares, sleepless nights, and anxious days; sickness will invade their dwelling.

But, it may be asked, is celibacy always "a life of single blessed-

ness?" have the unmarried no cares, no sickness, or no wants? and if they can plead no prescriptive right of exemption from the common lot of man, upon what bosom can they pillow an aching heart, or into what ear whisper their many sorrows? what friend will sympathize, with cordial disinterestedness, in all their varied woes?

The marriage union is the most important of any we are capable of forming in this life, and it is not our own happiness alone, but that of others also, which is affected by our conduct in it. It is a union, not merely constituted with a view to the reciprocal benefit of the two individuals who contract to form it, but exercising likewise a paramount influence on the manners and happiness of society at large. It is, therefore, a matter of the deepest importance that the duties and obligations of our domestic and social relations should be accurately defined, and duly impressed on the hearts and consciences of mankind. It is on a due understanding, and a faithful discharge of these duties, that the happiness of the parties themselves, and the prosperity and welfare of the present and future generations depend.

PATIENCE UNDER DOMESTIC TROUBLES.

It is for these reasons that marriage is an indissoluble contract, which cannot be broken on account of caprice, interest, or other motives. Were it a civil contract only, men would be at liberty to part with their wives as they would with their cattle, and encouragement would be given to vice, immorality, and domestic disunion.

When individuals are aware that the situation in which they are placed is only terminable by death, they are obliged to bear with patience the troubles and vexations of domestic life—and this is in most cases a wise ordination. As a civil contract, the parties are at liberty to choose and to deliberate as to their future connection; it leaves to their own discretion the time, circumstances, prudence, and propriety of their union. But when once that union has taken place, no earthly power possesses the right to suspend or to dissolve it, on grounds of mere convenience, caprice, or pleasure. There is something unnatural and inferior to brutality in a parent who deserts his or her offspring. No attachment is so strong, no tenderness is so great, as that which is originated and cherished by marriage; and when this is violated by adultery, or elopement, it never can be revived, and a subsequent union is unhappy. A man, indeed, must be a bad judge of human nature, if he supposes that

the wife of his neighbor, whom he seduces, will be more faithful to him than to the man she has dishonored. Nevertheless, we daily observe persons in the higher ranks forming marriages of this kind, and, in general, deserting and rendering miserable the victims of their unhallowed passion.

Men may, and do, violate the sanctity of the marriage vow; ruin unsuspecting girls, whom they have first deceived by promises, which they are neither able nor willing to fulfil; destroy the comfort, the respectability, the welfare, and the happiness, of innocent families, by the seduction of the female parent; and yet these very men pass in society as respectable persons; are associated, by common consent, with our virtuous daughters, and modest matrons, and find a ready admittance into good society. Can it be a matter of surprise that such evils as we have glanced at should disgrace and degrade, injure and afflict society, so long as that society upholds and sanctions the vile adulterer and purse-proud profligate?

CRIMINALITY OF MEN.

As Christian moralists, we must denounce that perversion of feeling which would apologize, extenuate or soften down the criminality of men, whilst its whole weight of severity falls on the weaker sex. In our view, the duty of both is equally plain, and equally binding: and be the offenders of what sex they may, they equally sin against conscience, the obligations of their own vows, and the conditions of their own happiness. A man of virtue will be not only virtuous himself, but the friend of virtue also. He will honor his wife, and show his regard for decency and morals by refusing his friendship and acquaintance to those who bring contempt on virtuous love, and disgrace marriage by their easy virtue.

Nor can we censure too severely that levity, inconstancy, and duplicity with which men act in the violation of the most solemn engagements, when, having won the heart and the affections of a deserving and amiable female, and disregarding all their vows and protestations, they lead a wealthier, though often a less deserving, bride to the altar. Honor, feeling and religion alike proclaim the infamy of the act, and the heartlessness of the wretch who can thus traffic in the most sacred engagements, with all the coolness of mercenary consideration.

If the distinctions of rank, or the adventitious circumstances of fortune could shut out the oppressive cares of life—if the pride and pomp of worldly distinction could lull the pains of disease—if the splendor of

high life could shed one gleam of hope over a dying pillow, or dispel the gloom which broods over "the house appointed for all living;" if, in fact, human calamity and suffering could be averted by the sacrifice of feeling, affection and honor at the shrine of human vanity and human greatness, then, indeed, but not otherwise, would we extend forgiveness to the guilty trafficker.

Less criminal, because less selfish and mercenary, though equally foolish, is the importance attached by many to personal charms. Sickness, we know, will dim the lustre of the brightest eye, and wither the loveliest flower. The hue of health and the bloom of youthful vigor

will alike fade before the noxious breath of sickness and disease. The verdure of spring and the gaiety of summer must be succeeded by less pleasing seasons; but each season, to a pious and well-regulated mind, offers its appropriate charms. If the flowers of spring and the fruits of summer cannot continue in unfading beauty and richness, so neither can the graces of beauty and the loveliness of youth.

But it may be asked, are we then to woo poverty, and to wed deformity? By no means. We do not disparage rank, and wealth, and beauty, and outward grace; we allow them to be valuable, and even desirable blessings; but we pronounce them to be, of themselves, unconnected with those gifts and graces which no adversity can destroy nor lapse of time corrupt, most unsatisfactory blessings and miserable comforters. We are not such stoics as to exclude all reference to personal appearance,

or pecuniary circumstances; we give them their full weight in our decision; and that weight is by no means trifling—but, after all, we consider these things as of very inferior and secondary moment.

Were we to live always, or even generally, in public; were the ball-room our residence, and the scene of our daily duties; were we to be happy, only in proportion as we secured public applause and admiration, then, indeed, we might be justified in our own conscience, and in the opinion of the world, for expending all our care and concern on the dazzling pomps and vanities of life, and for making them the chief objects of our solicitude in our matrimonial alliances. But let us seriously inquire, how far does truth justify such a supposition? Do not the sober and important duties which attach to us as husbands, wives and parents, require that we should renounce, to a very considerable extent, the giddy pleasures and the tumultuous joys of public life?

As rational beings, as heads of families, as men pledged to the performance of important and solemn duties, HOME ought to be the centre to which our thoughts, our affections and our desires should ever turn. HOME is the seat of man's truest pleasure, as it is the sphere of his most important duties. The qualities which shed their kindliest influence over the domestic circle,

> Where all the tumult of a giddy world,
> Tost by ungenerous passions sinks away,

are those alone which should attract the esteem and conciliate the regard, and secure the affection of a rational and sober-minded man.

There are far more important requisites for marriage than accomplishments, and these are principles and habits. Without attention to these, every prospect of happiness will be infallibly blighted.

An amiable temper, sound judgment, good sense, a well-informed mind, correct taste, religious principles, united with the higher accomplishments of a well-educated mind, and blended with mildness of manner and gentleness of heart, will be found the substantial qualities which cannot fail to win the affection and secure the heart. These constitute the essential qualities

> Of fellowship, fit to participate
> All rational delight.

Whilst, however, we condemn, with a just and severe reprobation, the folly and guilt of those who sacrifice honor and the best affections of

the human heart on the altar of Mammon, we must not be supposed to overlook or to undervalue the dictates of prudence. Love marriages, as they are called, usually terminate in bitter disappointment; the claims of a young and increasing family will eventually force themselves on the attention of the parents, and, it is to be feared that the vulgar considerations of discharging bills and meeting family expenses will prove a fruitful source of those bickerings and disagreements which too plainly show the incautious folly and heedless imprudence with which their union was formed. Love cannot clothe, educate or maintain a family, nor yet satisfy the importunity of a distressed or impatient creditor. We would temper the ardor of passion by the sobriety of reason, and bring the affections of the heart under the control of prudence and discretion.

It is evident from the preceding observations, that judicious and virtuous parents are bound to interpose their authority when there is danger of improvident alliances, and ought to point out the impropriety and inexpediency of marriage. But it is never justifiable that parents should seek to ally their children with those for whom they have no affection, or contemplate only with disgust and repugnance. Paternal authority cannot reasonably compel alliances against which inclination protests; though there are too many forced and unhappy marriages arising from this cause.

The happiness resulting from a well-formed marriage depends on mental excellence of the parties. This can only be known by long acquaintance. Love at first sight and ball-room and street matches are generally the sources of endless misery; they are formed without consideration, and originate in a transient excitement of feeling. True love is founded on esteem, and esteem is the result of intimate acquaintance and confidential intercourse. This is the origin of pure and virtuous love. Marriages based upon this are the only happy ones.

THE PERFECT FEMALE FORM

CHAPTER IV.

THERE are several conditions necessary to the highest and most enduring health. One of these is the purity of the blood. The lungs are designed to aid in maintaining the purity of this fluid, by relieving it of the noxious materials it has acquired in the round of its circulation, and by furnishing fresh supplies of oxygen to repair the tissues of the organs, ever wasting under the processes of vital action.

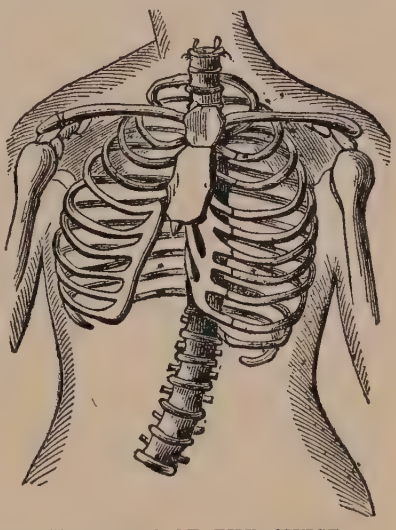
The walls of the chest are so contrived as to give admission of air to the lungs by elevation of the ribs and the depression of the diaphragm. It is necessary that this bellows movement of the chest, by which the lungs are supplied with air, should be free and unrestrained; for the ribs are so connected together, that whatever arrests the motion of one or two of the long ribs on both sides of the chest affects the motion of the whole; and it would be as philosophical to tie the handles of a bellows together in order to have it work well upon a fire, as to apply a belt or any other article of dress so firmly about the chest as to arrest the motion of the ribs in respiration.

Were it not for the diaphragm, which has a motion of its own, life would be sustained but a few minutes under an entire arrest of the motion of the ribs. When the lower part of the chest is in a state of compression, the diaphragm, acting from a smaller circumference from its fixed margin, moves less efficiently, and its embarrassment is still further increased when the walls of the abdomen are so compressed upon the viscera, the stomach, spleen, liver, intestines, etc., as to obstruct the rising and falling movement belonging to a natural respiration.

The lungs of a well-developed adult occupy the space of a hundred and fifty to three hundred cubic inches. They consist largely of air cells, so minute that some anatomists have stated their number as high as six

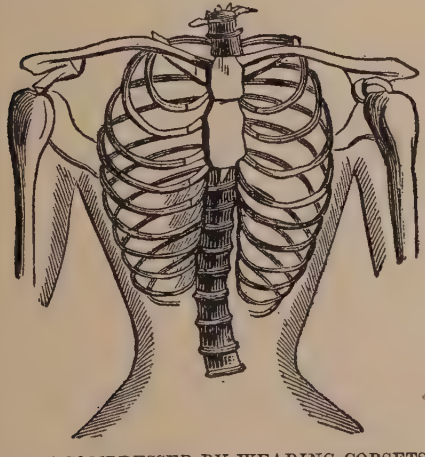
hundred millions in both lungs. Lieberkuhn has estimated the amount of surface on which the blood is exposed to the action of the air in them, to be not less than fourteen hundred square feet.

Whatever mechanical contrivance is so applied to the chest as to shut out from the lungs a part of the air they are capable of receiving, causes a degeneration of the blood, increases the liability to disease, and becomes the ground-work of premature decay and death. Dr. Herbst, by actual experiment made on young men who wore the Russian belt or corset, ascertained that when belted they inhaled, at their deepest inspiration, from one-fourth to one-third less air than when the belt was removed, and the chest left free from constraint.



SKELETON OF THE CHEST.

It is obvious that the lungs of a child, although healthy, are not large enough to aerate or purify the blood of an adult. A certain proportion, between the capacity of the lungs and the size of the other organs, is necessary to their healthy activity and power of endurance. If, in childhood, or during the period of the growth of the body, the chest is kept in a state of compression, so as to prevent the natural and full development of the lungs, the healthy proportion between them and the other organs is violated, and the injury can never be fully repaired. When disease attacks one lung, and permanently shuts up one half or the whole of its air cells, there is not left the same vigor of health, or power of resistance to the causes of disease, which nature intended.



CHEST COMPRESSED BY WEARING CORSETS

I have seen this verified in the case of a young lady, Miss M. At the age of about seventeen she had an inflammation of the right side of the chest, which terminated in complete hepatization or consolidation of the right lung. The sound on percussion was dull or flat. The ribs on the right side were shut down closely upon each other,

and had not the slightest appreciable motion in respiration. In this condition, with only one lung to act upon the blood, she lived, in delicate and fluctuating health, for five years, when, on a cold day in winter, she rode out a few miles and took cold, which was followed by inflammation of the left lung, and a rapid consumption, which carried her off in a few weeks. Had both lungs been sound, she might very probably have so far resisted the cold as to have experienced nothing worse from it than a slight indisposition.

Among the lower animals those that are best fitted for activity, strength, and prolonged muscular exertion possess large lungs, as the race-horse and the greyhound. Dealers in horses always look out for an animal with a large chest, or "good wind." Would it be well to apply a corset to these animals for the chase? Do they not need it as much as women and children?

NATURAL FORM—UNLACED.

DEFORMED BY LACING.

The subject of tight lacing has been for many years the *piece de resistance* of all who have dealt with the hygienic aspects of dress. The popular lecturer, the popular writer, and the popular artist, have all expended considerable pains and energy upon the subject. It has been attacked with the most violent abuse, and condemned with the bitterest invective, and there are few ills to which flesh is heir that have not been ascribed by some one or another to this fashionable practice.

In dealing with the matter, there would appear to be a tendency to reckless exaggeration and sweeping assertion, and a disposition to treat the subject with explosive and hysterical vigor. The practice of tight lacing is no doubt bad in more ways than one, but the disappearance of the fashion is not likely to be brought about by the ill-considered abuse and imperfectly substantiated statements.

Few, for example, could treat with other than an incredulous smile the assertion of an American physician that tight lacing "has done more within the last century than war, pestilence, and famine towards the

physical deterioration of civilized man." And coming more to facts, one can only regard as remarkable the experience of a lady doctor who, at a *post-mortem* examination of some women with "the broad peasant waist," found that "in one case the liver had been completely cut in two, and was only held together by a calloused bit of tissue." This condition might have existed in the case referred to, but there would be few who would be bold enough to ascribe it to faults in dress in a female with "the broad peasant waist." I shall endeavor, therefore, in the following remarks to keep as closely as possible to actual facts, and to avoid conclusions that may be open to the charge of being strained and biassed.

Although the corset is, comparatively speaking, a modern production, yet the practice of constricting the waist would appear to be of some antiquity. Contemporary with the origin of the fashion there no doubt came solemn warnings as to its evils, and, according to Cerviotti, Hippocrates—who died B. C. 361—vigorously reproached the ladies of Cos for too tightly compressing their ribs, and thus interfering with their breathing powers.

TIGHT LACING UNREASONABLE.

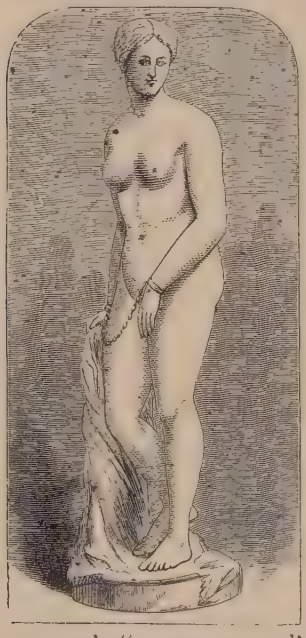
In the first place, as a matter of common sense, it must be owned that tight lacing cannot occupy a very high position. Considering the subject quite apart from any æsthetic grounds, and quite apart from any hygienic influences, the compression of the ribs and abdominal walls in a young and perfectly developed woman must appear strangely unreasonable. I do not open up the question as to how far women whose figures are ill-formed or unsightly are justified in tight lacing to produce a more normal appearance, but take rather the simple fact of a female in robust health and of perfect outline who thinks fit for certain reasons to deform the body. In the strictest sense of the term, the body of a normal woman who is tight laced must be regarded as deformed. Through most ages and among most peoples some deformity of the body has been at one time or another fashionable. Professor Flower, in his admirable little book on "Fashion in Deformity," has dealt with many of these.

Certain Indians, for example, think fit to flatten the head by means of pressure applied to the growing skull. The Chinese lady cramps her foot until it is neither fit to look at nor to walk upon. Among other nations it is fashionable to wear a bone thrust through the nose, or to deform the lower lip by inserting a disc of stone or metal beneath the

skin. The civilized American of the present day prefers to compress her ribs, and to produce a certain modification in the outline of the body. As evidences of intelligence and of a reasoning faculty, these practices must all occupy about the same low level, and it is remarkable that in highly civilized nations—prone to recognize the absurdities of other less favored peoples—the production of bodily deformities should still be an essential item in fashion.

As a matter of beauty, the claims of the constricted waist have been somewhat severely criticised and opposed. Many of those who acknowledge that tight lacing may possibly be injurious to the health, and own that the practice in the abstract is not sensible, would yet contend for its maintenance, on the grounds that the narrow waist adds to the beauty of the outline, and is the subject of much admiration. A desire to be attractive and a love for admiration are potent influences on the female mind; and but a scanty knowledge of human nature would assure us that, with many, those influences will outweigh distant fears of impaired health.

THE NATURAL FEMALE FORM



POWERS'S "GREEK SLAVE."

In discussing this matter, therefore, it is impossible to avoid some consideration of the æsthetic claims of the narrowed waist. In an anatomical sense, the most perfect outline of the female figure would be represented by that of a nude, young, normally developed woman. Such a figure would, it is well known, present a waist some 26 or 27 inches in circumference; that would be regarded by many with absolute horror. Now, in all the most excellent attempts that art has made to give expression to female loveliness, this outline of the healthy and perfectly constructed woman has always been reverently preserved. It is the outline that has been made famous by the grandest statuary of ancient and modern times, and that has been the glory of the painter since the earliest days of art. Such an outline is well represented by the famous Venus de Medici. Side by side with the drawing of this marble is a representation of a narrow waist—by no means extreme—which, to ensure freedom from exaggeration, has been taken from a photograph.

There are some who would say that the Venus is coarse and

unwieldly in outline, and maintain that the more modern figure gives a pleasant impression of trimness, and presents altogether a more agreeable configuration. Without discussing the matter at length, it can only be pointed out that the figure of Venus is the figure of anatomical perfection, of complete development, and of perfect health. If the outline be coarse and repulsive, then is nature coarse, and the expression of simple bodily vigor a thing to offend the eye. In the Venus there is a gentle sweep from the shoulder to the hip, all parts are in proportion, the actual outline of the body precisely according with the principles of beauty. In the modern figure there is an abrupt constriction of the waist; the shoulders and hips appear ponderous by comparison, the outline is pronounced and lacking in simple ease, and, so far as the anatomical eye can view it, the proportions of the body are lost.

THE VENUS DE MEDICI, SHOWING THE NATURAL OUTLINE OF THE BODY.

THE OUTLINE OF THE BODY PRODUCED BY TIGHT LACING.

One point remains to be noticed; there are some who, while they acknowledge the beauty of the outline of the nude figure, maintain that that outline is not adapted to the body when draped with clothing. They assert that the perfectly developed nude figure cannot be accepted as the standard upon which to judge the fittest outline of the clothed figure.

They assert that the dress conceals the outline of the lower extremities, and substitutes an outline that is perfectly different, and that is not consistent with the configuration of the normal waist. It is insisted, moreover, that inasmuch as in the female the natural outline of the extremities cannot be decently represented in a clothed figure, the entire proportions of the body are altered, and so altered as to render a waist of natural dimensions no longer desirable.

CERES.

Thus is opened up the question as to how far any form of garment that reproduces the configuration of the nude figure is to be admired. Those who advocate the views just detailed maintain that some constriction of the waist is necessary to the female figure when dressed, in order to restore proportions that have been lost by the concealment of the lower limbs, and support their argument by mathematical data. I imagine that the decision of such a matter must be a question purely of individual taste and judgment, and to such a censorship the subject must be left at present. For my own part I hold the belief that that dress is the most becoming to woman which the most accurately reproduces the exquisite outline of the nude figure, provided that such a costume offends in no way the strictest dictates of modesty.

This lateral curvature of the spine is very seldom met with in boys. They suffer no constraint from dress, and find means, even in cities, of taking free exercise in the open air. At a late period of the career of that eminent surgeon, Dr. P. S. Physick, of Philadelphia, I had the opportunity of asking him whether he had often seen cases of lateral curvature of the spine in boys. After a short pause he replied, "I do not remember to have seen above one case in a boy." "You have seen

it, sir, in girls?" "Yes," said he, promptly and emphatically, "in thousands." The female boarding-schools, as they were conducted some years ago, were a fruitful source of this complaint. The girls were compelled to occupy seats without a back or anything to lean against; were required to sit prim for several hours, in order to keep the body erect. The effect of this was to tire out the muscles in their unremitted exertions, and allow the spine to bend under the weight it had to sustain.

Dr. Forbes, an eminent London physician, mentions having found in a boarding-school upwards of forty young misses, a large proportion of them having their spines affected in this way. Within the last few years some improvements, as to seats and exercise, have found their way into these institutions, in our country.

FLORA.

In the early stage of this affection, when the curvature is but slight, and the patient, by a strong muscular effort to resist downward pressure made upon the top of the head, can, for a few moments, so erect the spine as to bring the spinous processes into a straight vertical line, the case is remediable; and even when the affection is in a form somewhat more grave its progress may often be arrested.

In the treatment of lateral curvature of the spine an entirely loose dress should be prescribed, an early morning sponge bath in tepid or cold water, followed by free dry friction, especially to the back and limbs, daily and persevering exercise in the open air, and a plain, unstimulating but substantial diet. In the early stage of the complaint, carrying a weight on the head, as suggested by Mr. Wilson, in order to compel the muscles to a temporary extra effort, may be required as an auxiliary to the end in view. A convenient form for the weight is a bag of sand, which can easily be graduated to the strength

of the spinal muscles to sustain it, under a strong voluntary exertion for ten minutes or more, until a slight sense of fatigue is felt. This may be repeated several times in a day.

Among the Greeks and Romans the cestus or girdle was employed to gather the flowing robe around the waist, leaving the form and proportions of the body free and natural. When and where the tight waist or corset first appeared, it is not easy, nor is it important, to determine, but it has existed for several centuries, and has been almost, if not quite, exclusively found among nations enlightened, and nominally Christian. In what costume more becoming or attractive has woman ever appeared than in the impersonation of beauty and elegance in Hebe, Ceres, and Flora?

HEBE.

There is but one word that can be offered in favor of the custom of tight dressing, and that word is Fashion. Reason and common sense are against it; anatomy, physiology, the love of health and life, are against it; good taste, humanity, and religion are against it. Who could have been the prime instigator of a fashion so hostile to health and life?

A physician is not unfrequently consulted in the case of a female patient who complains of a pain in the side, headache, sometimes dizziness, a dry cough, capricious appetite, with derangement of function in the alimentary canal. Among other suggestions, the doctor recommends a perfectly loose dress. The lady assures him that she does not dress tight; she could never bear anything tight about her in her life. If she be young, and her mother is present, this statement is confirmed in a matronly decision, given with unappealable emphasis, again and again repeated. The doctor, if not convinced nor disposed to relinquish his position, asks for a piece of tape or narrow ribbon, passes it round the lower third of the chest of the patient, comparing its circumference under a prolonged expiration with that of the fullest inspiration, and showing a difference, if any at all, of from a quarter to half an inch.

This experiment, with the proper explanations, puts a period to the

discussion, if it fails to enforce observance of the advice. No lady considers herself as dressing tight if she knows any one who dresses tighter. A person accustomed to a tight dress feels a want of support without it. "I feel as though I should fall to pieces without my stays; and then how I should look with nothing snug and genteel about me!" To the question sometimes put, What is tight dressing? the answer is, any article of dress that shuts the blood from a single vessel, or the air from a single air-cell, is too tight for the most perfect health.

One erroneous impression as to the anatomy of the female body may be conveniently noted in this place. It has been many times declared that the amount of "waist" varies in different women, and that some are naturally provided with a tapering waist. In answer to those who are impressed with this belief, it may be said that the amount of constriction that constitutes the waist does not vary in bodies of like size and of like development. Like all other anatomical proportions, the proportions of the waist are constant, other things being equal. If, however, the hips are unduly prominent, or unduly dwarfed, the waist may appear in the one case more distinct and in the other less obvious. Obesity may obliterate the waist, and emaciation make it more pronounced.

Young children and young girls have a less definite waist, owing to the fact that their hip bones are relatively as well as actually smaller than are the same parts in the fully developed. No woman, however, enters this world with the "wasp-like waist" ready made, and under no circumstances can the fashionable constriction be developed without artificial means. This assertion is not affected by the fact that the narrowing of the trunk is, in some individuals, more easily produced than others.

The natural waist, such as it is, consists of a narrowing of the trunk in the interval between the last of the ribs and the top of the hip bone. A reference to the normal skeleton will show that this interval is by no

means extensive, and that it affords the only opportunity for the development of a natural constriction of the soft parts. Let all those, therefore, who practice tight lacing (if even to a slight extent) distinctly understand that the narrowing of the waist is effected mainly at the expense of the internal organs. The smaller the waist you wish to obtain, the more must you compress those organs. It is no question merely of squeezing in skin, and muscle, and bone—it is a question of squeezing in lungs, and stomach, and liver. An examination of the body after death of those who have practised severe tight lacing shows forcibly the effects of the practice. The liver is found pushed down, and more or less dislodged from its proper place. Moreover, it will appear indented by the ribs, and these indentations mean that the ribs have been so forcibly driven into the liver as to leave permanent indications of that fact. In like manner the stomach will be dragged out of position and is often structurally altered. The diaphragm is pushed up, the lung space is encroached upon, and the heart often suffers no inconsiderable displacement.

EVILS OF TIGHT LACING.

How does all this affect the health? The liver is an organ whose importance in the general economy cannot be well exaggerated. Through it passes the blood concerned in digestion, and in addition to this the organ itself takes an important and essential part in the act of digestion. The result of the pressure from tight lacing is that the circulation through the liver may become impeded, and the function of the gland disturbed. As a result of this (aided by changes elsewhere), various forms of dyspepsia become common, and following upon them may come some part of that general malnutrition often noticed in the miniature-waisted. It has been pointed out that the malady known as gall stones is more common in women than in men, and it has been suggested, with some reason, that this disproportion is due to the peculiarities of female dress. Pressure upon the stomach may cause gastralgia, indigestion, nausea, vomiting, and other inconveniences.

A serious and sometimes fatal disease—ulcer of the stomach—has been shown to be capable of being produced by the practice of tight lacing, and to the same practice may often be assigned many forms of colic, and that ailment known to the laity as "spasms." Upon the organs peculiar to the female the pressure effects of tight lacing have a particularly baneful effect, and there is no question but that the practice

has led to serious and incurable affections of those parts. A recent author, dealing with these diseases, recognizes improprieties of dress as a frequent and vigorous cause of these special ailments, and points out the manner in which displacements of the womb can be produced by constricted waists.

The diaphragm is a muscle concerned solely in the act of breathing, and its function therefore is of the highest importance. It unfortunately happens that the attachment, or base of action of this muscle, is represented by the very ribs that help to form the hour-glass waist. The result is, that in a tightly laced individual the diaphragm can have but little action, and the breathing power becomes thus seriously restricted.

A simple experiment with the spirometer will show that a woman, even if she adopts but a slight constriction of the waist, has much greater breathing capacity with her stays off than with them on. The breathing in tight lacing, however, is not only impaired by interference with the diaphragm, but also by the constriction of the ribs. In the act of respiration the ribs move freely up and down, but when the body is gripped by a corset, the movement of the lower ribs can be scarcely possible.

A PERFECT FEMALE FORM.

PSYCHE.

In addition to these evils, the lungs themselves must be subjected to a more or less serious compression. It is easy to surmise how this tampering with important organs will affect the general health. Air is essential to life, and it must be breathed freely and fully. There are few who have not some idea of the effects of an insufficient supply of pure air. The tight-laced individual may be surrounded with plenty of oxygen, but so compressed are her breathing organs that she cannot draw it into her lungs. She is in the position of a person starving in the midst of plenty. Any one who has watched a wasp-waisted lady after a dance, must have noticed the unsightly and exaggerated heaving of the upper part of the chest, which is merely an expression of Nature's efforts to obtain a proper supply of air.

Apart from these immediate effects there are certain remote effects. Among these may be mentioned the languor, the unfitness for vigorous

exertion, the sensation of lassitude of which so many tightly laced ladies complain—symptoms due to no small extent to the persistent and gross interference with the natural act of breathing, aided by the malnutrition incident upon impaired digestive functions.

As already stated, undue constriction of the waist may cause some displacement of the heart, but it also serves to seriously embarrass the general circulation. This is effected mainly by an interference with the blood current in the lungs and great abdominal viscera, whereby an unnecessary strain is thrown upon the heart. The victims of miniature waists are often troubled with palpitation, and are liable to faint, or at least feel uncomfortable after unusual exertion.

OUTLINE OF THE HUMAN FORM, representing the muscles of the abdomen, well developed, retaining the organs of the abdomen in their proper places.

Two or three cases have been recorded in the medical journals of death from apoplexy in young women who were extravagantly tight-laced. A visible disturbance of the blood circulation of the face has long been popularly associated with the tapering waist, and it is a common taunt to assert of a much-constricted woman that her corset is too tight to allow her to sit down without her nose becoming red.

The injurious effect of tight corsets upon the muscles of the back is very obvious. The spinal column is kept erect by a large number of important muscles that run down the whole length of the trunk. It is well known that the more a muscle is exercised within reason, the larger and more vigorous does it become; the disused muscle, on the other hand, becoming wasted, flabby, and greatly impaired in strength. When close-fitting and rigid corsets are used the responsibility of supporting the back falls to a great extent upon the corset; the function of the muscles is more or less superseded, and from long-continued disuse they become wasted, shrunken, and enfeebled. They undergo, indeed, the same changes that the muscles of a man's arm would undergo should he think fit to keep the limb fastened to a board for any length of time.

The back of a woman who has long worn stays is emphatically ugly.

It will be found to have lost its agreeable outline; the shrinking of the muscles will have caused the bones to appear unduly prominent, and the general aspect of the part will be flat, inert and expressive of defective development. During the period of growth the muscles require frequent and vigorous exercise; and if young girls, and even young women, persistently wear stays, it follows that their muscles suffer unusually; the function of those muscles is absorbed by the corset, and the longer these so-called "supports" are worn, the more indispensable do they become, and the more completely are they relied upon for the support of this most important part of the body.

OUTLINE OF THE HUMAN FORM, representing the muscles of the abdomen weakened and relaxed, with prolapsus of all of the organs in the cavity of the abdomen, etc.

Muscular weakness in the structures that maintain the erect position of the spine may lead to curvature and other deformities of the back, and thus it is that the use of rigid corsets in young people has been so generally condemned by surgeons as a most efficient means for producing spinal ailments.

In the same way the use of corsets tends to weaken the abdominal muscles, because they, to a certain extent, absorb the function of those muscles, and allow them to waste from disuse. Thus some undue protuberance of the abdomen is not uncommon in those who have long worn stays, and this additional deformity has necessitated an additional evil in the form of certain abdominal belts.

Not only does tight lacing affect the outline of the figure at the waist, but it must produce changes also in the configuration of other parts of the body. It tends, in the first instance, to make the shoulders high and square. This is due to the expansion of the upper part of the chest that is compensatory to the compression of the lower part. At first the high and square shoulders of tightly-laced women may not be considered to be unsightly. The body is certainly made to assume a somewhat triangular outline, and the graceful slope of the shoulders is lost. But this change in figure is tolerated as seeming to exaggerate the smallness of the waist, for the wider the shoulders and the broader the hips the

more microscopic does the waist appear. As years advance this deformity of the upper part of the body usually becomes more pronounced, and is unmitigatedly ugly. The high shoulders become round, cumbrous and unsightly, while the increased breathing efforts of years will have caused an undue prominence of the upper part of the chest, that adds to the general shapelessness. Tight-lacing, moreover, can never allow of a graceful and easy carriage. The introduction of a rigid stiffness about the middle of the body will quite prevent that, and will render most of the movements constrained and angular.

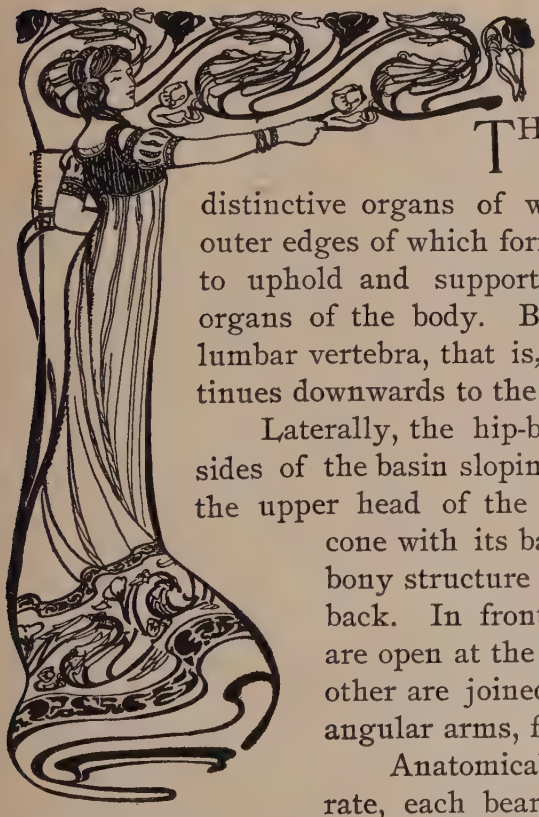
If the power of tight-lacing for causing wasting of muscle be borne in mind, it will be understood that of all means that the ingenuity of man could devise for preserving the youthfulness of the figure, there is perhaps none that will prove more useless, or that will more completely defeat its own purpose, than the persistent wearing of an arrangement of steel and whalebone.

A REPROACH UPON NATURE.

In concluding this part of the matter we might approach the question so often asked: "Are stays a necessity?" Many women assert that they derive great comfort from stays, that they support the body admirably, and that without them the wearer feels inclined to "drop to pieces." All this may be perfectly true. But what significance must we attach to the statement that certain women cannot possibly do without stays? Do they mean for one moment to assert that the human body is so ill constructed and so badly adapted for its purpose in life that it has to depend for its integrity upon the productions of a corset maker? Such an assumption is simply outrageous, the true explanation being that by the persistent use of stays the muscles of the back have become so enfeebled (from prolonged disuse) that they are no longer able to support the spine.

Those who declare, therefore, that they cannot do without stays adopt the argument of the opium-eater, who maintains that he cannot do without his opium. The long-continued use of the drug has so impaired his system that he feels a constant craving for it. And those who cannot exist unless braced up by corsets have so enfeebled a part of their system that they cannot do without the support upon which they have so long depended.

THE FEMALE PELVIS.



CHAPTER V.

THE Pelvis is an important part of the skeleton in the study of the distinctive organs of woman. It is the bony basin, the outer edges of which form the hips, and which is spread out to uphold and support all the most important interior organs of the body. Behind, it commences at the lowest lumbar vertebra, that is, at the small of the back, and continues downwards to the end of the spine.

Laterally, the hip-bones form its prominent parts, the sides of the basin sloping downwardly and inwardly, below the upper head of the thigh-bones. This would form a cone with its base upwards if it were closed in by bony structure in front, as it is on its sides and back. In front, however, the sides of the pelvis are open at the top, and coming down to meet each other are joined at the lower extremity by two triangular arms, forming the pubis.

Anatomically, all these bony parts are separate, each bearing a distinct name, such as "the Sacum," behind, "Ossa Innominata," at the sides, and "Os Pubis," in front. The bones at the bottom of the pelvic basin, on which the body rests when in sitting posture, are called "Ischii."

All the above named bones knit together constitute one firm body, called pelvis, or basin. The cavity within this basin is not regular or straight, being somewhat bent and constricted in the middle like an old-fashioned barber's basin.

This constriction divides the cavity into two sections; the upper one being called by anatomists the "greater," and the lower one the "lesser," or the "superior" and "inferior, straits." The walls of the abdomen close and complete the cavity in front.

So far, this cavity has been spoken of as a distinct one, but in reality it is only a portion of the abdominal cavity, which reaches upward to the arch of the diaphragm at the base of the lungs. This great abdominal cavity, including that of the pelvis, contains above and on the right, the liver; in the center and at the lower extremity of the breast bone, the stomach; the spleen on the left; the kidneys behind, or about at the small of the back; the intestines filling up the largest portion of the cavity in the center, and the bladder and the rectum lying at the lowest end of the funnel-shaped space.

FALLOPIAN TUBES AND OVARIES.

In woman, however, the womb occupies a space an inch or two below the navel, behind the small intestines, and in front of the rectum. It lies about six inches above the entrance of the vagina, with which it connects, just as the small end of a pear (which is about the shape of the womb) would enter into a tube larger than its neck, but smaller than its body. In continuation with the upper end of the womb are the "Fallopian tubes" and the "ovaries" (the uses of which will be explained hereafter), which extend to the right and to the left, like the spread wings of a bat.

The "ovaries" lie in the hollow on each side of the abdomen, formed by the projection of the hip-bones, about two inches below the crest. All these various organs are held in position in the abdominal cavity by a membrane called the "Peretonium;" besides all these there are arteries, veins, nerves, lymphatics, etc.

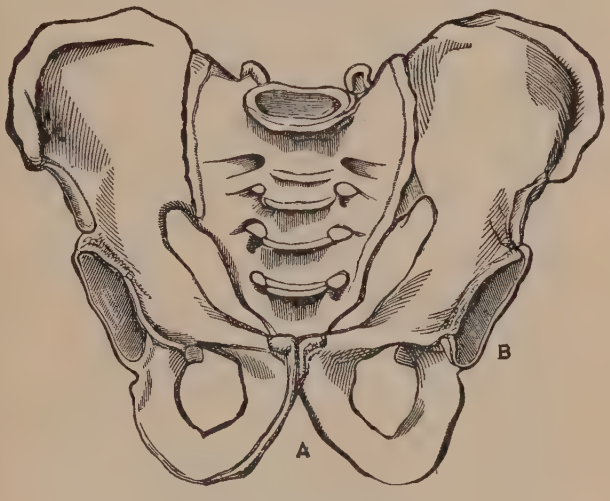
The pelvis is somewhat different in the two sexes, for very pertinent reasons. As a whole, the pelvis in the male is smaller but deeper; the bones are thicker. There are other, minor differences in the construction and the diameters, but they would be of little interest or importance to the reader.

The two lower limbs are attached to the sides of the bony circle formed by the pelvis, and support, in the erect posture, all the weight of the upper part of the body.

Another important function of the pelvis is to enclose and protect the generative and digestive organs. During gestation, it sustains and

gives a proper direction to the womb; and in labor it affords a safe passage to the child. From this description is evident the necessity to women of perfection in the construction of the pelvis in giving birth to the child.

Since the pelvis has important relation to child-bearing, it follows that in early life great care should be exercised that proper proportions may be secured, and deviations from normal conditions obviated. Its cavities and outlets are regarded by the physician with great interest, for upon them depends, in a great measure, the safety of the mother at delivery. Like all other bony structures, its development is gradual until the age of eighteen, and even later, when ossification seems to have reached its degree of perfection.



MALE PELVIS.

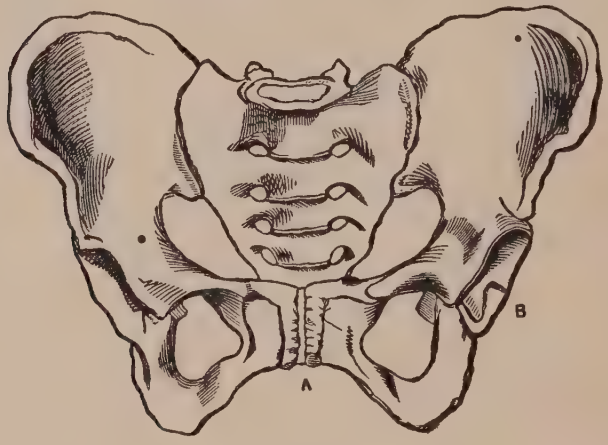
A. Narrow Arch; B. Cup-like Cavities to receive the bones of the legs.

During all these years of growth, the various bones of the pelvis are held together by muscular attachments, and by cartilaginous articulations. During the tender age of a girl, a fall, or badly applied vestments, causing pressure on any part of it, may disturb the normal position of the respective bones, and produce a distorted pelvis. Such an unfortunate occurrence might prove a serious malformation, that would impede the natural progress of labor.

At birth, the pelvis is extremely narrow and elongated, and of such inconceivably small dimensions that its cavity cannot contain several of the organs afterwards found in it; from which circumstance the protuberance of the abdomen, observed in the fœtus and in children at term, in great measure results. It is stated by anatomists, however, that its form changes by degrees as little girls advance in age; thus it is that the diameter from front to back, which measures two and seven-eighths (2 7-8) inches at nine years, will gradually increase until at the eighteenth year it will have acquired a length of four inches; while the transverse diameter, which at nine years of age is found to be about three inches, at eighteen years is four and one-half (4 1-2) inches.

It is not enough to bear in mind the general form or construction of the pelvis as already given; its mode of development should also claim attention. As the pelvis is not a single bone completed at birth, but, on the contrary, a system of bones whose union is accomplished only in years after birth, it devolves upon us to know its manner of growth, that it may not be exposed to accidents, to distortions, or to deviations.

We find that at birth and for several years after, the pelvis is divided into separate parts, each part being kept in juxtaposition to the others by elastic, fibrous ligaments and cartilages. There are no less than six such parts thus united, three on each side, having five distinct articulations or joints. It is true that these articulations do not allow as much freedom of motion as those of the elbows, knees, or other bony surfaces of the skeleton; but they are nevertheless movable, sliding one on the other and easily bent by compression, particularly during the tender period preceding puberty, and more or less, also, until the age of eighteen, when ossification has firmly secured the several parts together.



FEMALE PELVIS.

A. Broad Arch; B. Cup-like Cavities to receive the bones of the legs.

Mothers acquainted with these facts could not fail to appreciate our solicitude regarding the normal growth of this part of the body of women. The tender care of the mother should therefore commence immediately after the birth of a girl. At this time it is usual for the nurse, for the sake of neatness, to apply a napkin to the child; but this napkin is often a cumbrous affair, badly adjusted. It is generally folded in a triangular form, the longest side drawn over the hips around the back and pinned in front of the abdomen.

We have already stated that at this time of life the little pelvis is so incompletely developed that the womb of a girl is out of its cavity and the protection of its bones. If that napkin is coarse and heavy, clumsily applied, or too tight around the abdomen, it may be that undue pressure is exerted over the prominence of the abdomen, thus causing the womb to

THE FIRST WHISPERINGS OF LOVE.

THE MOTHER'S CHARGE.

THERE IS NO OCCUPATION TO COMPARE WITH THAT OF MOULDING THE LIFE OF A CHILD.

THE MOTHER'S JOY.

THE WOMAN WHO FAITHFULLY ASSUMES THE DUTIES OF MOTHERHOOD IS DOING THE GREATEST WORK IN WHICH HUMAN SKILL AND POWER CAN BE EMPLOYED.

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BEAUTY AND STRENGTH EXERCISE.

PERFORMED WITHOUT THE AID OF TECHNICAL APPARATUS, DESIGNED TO FURTHER THE PROPORTIONATE DEVELOPMENT OF THE BODY, RENDER THE JOINTS MORE FLEXIBLE IN ALL DIRECTIONS, GIVE THE PLEASING AND GRACEFUL APPEARANCE OF FIRMNESS, STEADINESS, AND DEXTERITY IN THE POSITION AND IN THE USE OF THE LIMBS, AND SECURE PHYSICAL BEAUTY, MUSCULAR STRENGTH AND ROBUST HEALTH.

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THE LEG AND FOOT EXERCISE.

AT FIRST, THE STUDENT WILL FIND IT DIFFICULT TO KEEP HER BALANCE, WHILE EXECUTING THIS MOVEMENT; BUT MUST LEARN TO DO SO WITHOUT LEANING UPON ANYTHING. ENDEAVOR TO KEEP ONE'S BALANCE AND THE UPRIGHT POSITION OF THE BODY, CALLS INTO ACTION MANY MUSCLES, AND IS ONE OF THE AIMS OF THE EXERCISE.

GYMNASTICS WITH HOME APPARATUS.

MAKES THE LIMBS PLUMP, THE CHEST FULL, THE LUNGS STRONG, AND THE DIGESTION GOOD.

DEVELOPING A GOOD FIGURE.

EXERCISE FOR INCREASING MUSCULAR DEVELOPMENT AND EXPANDING THE LUNGS, A FASCINATING EXERCISE FOR WOMEN, WHO FIND IT A RELIEF AND RELAXATION FROM THE DAY'S TOIL AND ANXIETY.

THE BABY'S MORNING BATH.

FRICTIONS AND BATHING ARE HEALTHFUL TO THE SKIN AT EVERY TIME OF LIFE, BUT PARTICULARLY DURING CHILDHOOD.

A MOTHER'S LOVE.

WHAT IS MORE BEAUTIFUL THAN A MOTHER'S LOVE?

"WHO RAN TO HELP ME WHEN I FELL
AND WOULD SOME PRETTY STORY TELL,
OR KISS THE PLACE TO MAKE IT WELL?
MY MOTHER."

LADIES OF THE EIGHTEENTH CENTURY.

VARIOUS MODES OF DRESSING THE HAIR.

EXERCISE WITH INDIAN CLUBS.

INDIAN CLUBS ARE DESERVEDLY HELD IN THE HIGHEST ESTEEM BY ALL GYMNASTS, AFFORDING ONE OF THE VERY BEST AND MOST EXTENDED SERIES OF EXERCISES FOR DEVELOPING THE MUSCULAR POWER OF THE WHOLE BODY.

THE WAND EXERCISE.

WANDS FURNISH AN EXTENDED COURSE OF BEAUTIFUL AND PECULIARLY EFFECTIVE EXERCISES; THEY MAY BE REGARDED AS ALMOST INDISPENSABLE IN THE FORMATION OF A SYSTEM OF PHYSICAL TRAINING. THEY CALL INTO PLAY, SEPARATELY, AND IN COMBINATION, ALL THE MUSCLES AND JOINTS.

ARM EXERCISE WITH DUMB-BELLS

EXERTS AN IMPORTANT INFLUENCE UPON THE CHEST AND VITAL ORGANS, AND SHOULD BE USED WITH CAUTION, ESPECIALLY BY THOSE WHO ARE WEAK AND HAVE NARROW CHESTS.

CHEST AND ELBOW EXERCISE.

DUMB-BELLS ARE SUPERIOR, AS A MEANS OF PHYSICAL CULTURE, TO ANY ARTICLE OF GYMNASTIC APPARATUS, AFFORDING THE MOST PLEASING, VARIED, AND CONCENTRATED OF ALL ATHETIC EXERCISES.

LOVE'S FIRST AWAKENING.

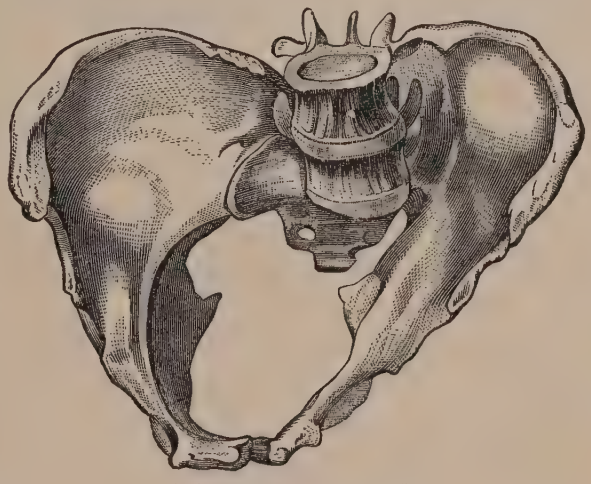
THE STRONGEST OF ALL HUMAN EMOTIONS.

PREPARED FOR OPEN AIR EXERCISE.

EXERCISE FOR DEVELOPING SUPPLENESS AND SYMMETRY.

descend, and induce, even at this early age, a displacement of that organ, which in turn may press upon the bladder, disabling the child from holding its water for a longer period than an hour. The frequent micturitions of infant girls may be due partly to this unsuspected pressure.

It is known, moreover, that at the tender age of infancy, the bones do not contain enough earthy matter to render them hard, and consequently they are pliable and easily bent. The broad bones of the pelvis are oblique; hence, constriction around the body may cause them to bend, thus changing the direction of growth, so that, instead of growing outwardly, they may be made to grow inwardly, restricting the development of the cavity to its minimum, instead of encouraging its width to the maximum.



A DEFORMED PELVIS.

In consideration of the above, the attendants should see that the bands and napkins applied to infants be so loose as to make no pressure whatever. Allowing a napkin to be a necessity for cleanliness, and even for decency, let it be pinned to the undershirt, or to a loose belt held in position by suspenders. This freedom, so much recommended for the proper development of the pelvis, is not to be neglected even later, when girls attain the age which ushers them into society that awakens in the mind a desire for beauty of form, of manner, and of dress, for then they improperly lace their waists, carry weight upon their hips, and in various ways compress the surface and circumference of the pelvis.

Deformity of Pelvis.—Fortunate would it be for child-bearing women if they each possessed a pelvis of the standard figure and dimensions. Such, however, is by no means the case; and this organ is subject to great varieties, as well in form as size. It would, indeed, be difficult to select from all the preserved specimens in existence, any two which exactly resembles each other—agreeing minutely in shape, dimensions and weight. Many are found to be much above the ordinary volume and numbers, on the other hand greatly below it.

The want of due capacity sometimes originates in natural formation; thus, a woman of short stature, although of tolerable symmetry, might be expected to possess a diminutive pelvis; but this is far from being universal, or even a general remark. Again, the re-union of the bones after fractures will commonly occasion both distortions and contraction of space; but when there exists a deficiency of room to any great extent the irregularity is mostly dependent on disease of the bones themselves.

If we look at the head of the child, and the cavity through which it has to traverse, in a mechanical point of view (which we must do before we can arrive at a correct knowledge of the process of parturition, even in the simplest and most easy state), we shall immediately perceive that size, as regards the head and the pelvis, is entirely a relative term, and that a pelvis preternaturally small, or a head unusually large, will each in practice occasion difficulty in the same degree as they deviate from the standard dimensions; so that it matters little whether the disproportion be the consequence of diseased action or any other cause; provided it exists, to a certain extent, it must necessarily be productive of a protracted struggle.

There are two diseases particularly through which the pelvis suffers considerable deterioration to size—rickets, a disorder of childhood, and softening of the bones in one of adult age. In both these affections there is a want of due solidity in the osseous system throughout the whole body. The animal matter entering into the composition of the skeleton being in great excess, and the earthy matter in proportionate deficiency, the bones yield like softened wax; the regularity and beauty of the pelvic form, as well as of other bony cavities, is destroyed, and miserable specimens of distortion are the result.

FEMALE ORGANS OF GENERATION.

CHAPTER VI.

THE generative or reproductive organs of the human female are usually divided into the internal and external. Those regarded as internal are concealed from view and protected within the body. Those that can be readily perceived are termed external. The entrance of the vagina may be stated as the line of demarcation of the two divisions.

The external organs of generation consist of the Mons Veneris, External and Internal Labia, Clitoris, Meatus, Urinarius and Hymen.

MONS VENERIS.—This is the prominence situated over the anterior bones of the pelvis, consisting of the integuments or skin (fatty or adipose tissue), and covered with hair at puberty.

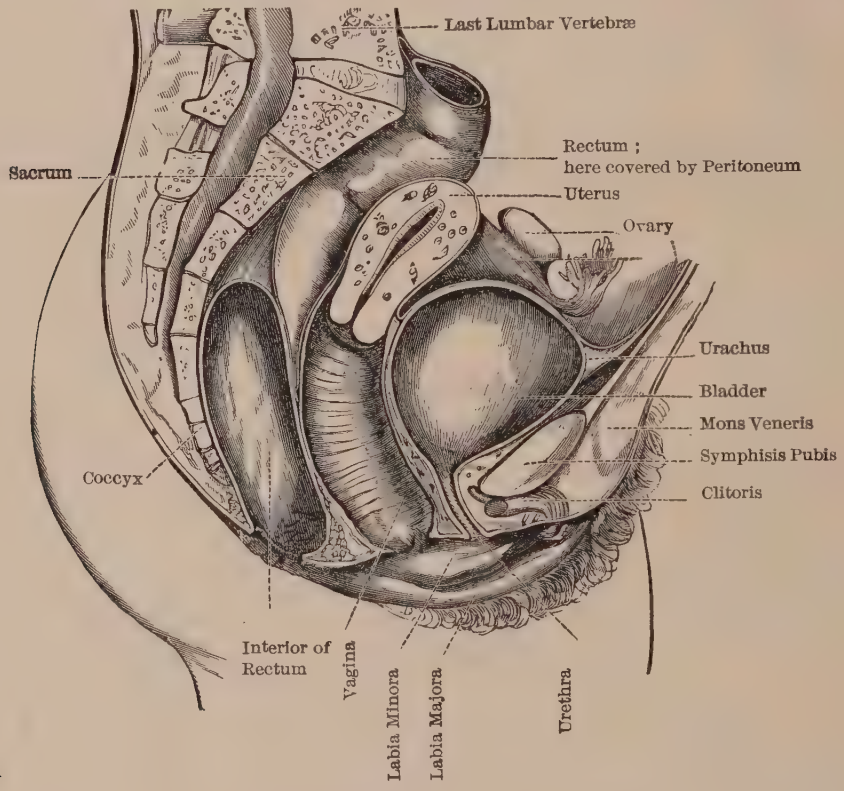
EXTERNAL LABIA.—The labia majora (large lips) are sometimes called the external lips of the vagina, and close the orifice of that passage, or canal. They are two thick membranous folds, constituting the sides of the external organs of generation, and extending from the mons veneris above to the perinæum below. By their union below the perinæum, they form the forchette or frænum.

Externally, the labia majora consists of a delicate skin covered with hair, continuous with that of the thigh and pubic region. The internal surface resembles a mucous membrane; is thin and smooth, of a reddish or pink color in youth, and pale in old age; being supplied with depressions which secrete an oleaginous substance. In the virgin both lips are closely united, forming a longitudinal slit. After frequent coition and parturition they remain, more or less, permanently separated by the labia minor (the smaller or inner lips), protruding between them.

They are sometimes the seat of swelling and suppuration, which is frequently very painful and distressing to the patient. They occasionally

entirely unite, which is caused by ulceration and the close approximation of each labia. They are sometimes found united in this way at birth. The diseases of these parts are frequently the consequences of uncleanliness.

CLITORIS.—This is a body which is seen immediately below the mons veneris, by separating the external labia. It is usually about one



FEMALE PELVIS AND ORGANS.

inch in length, and formed similarly to the male penis. This portion of the organs of generation is richly endowed with nerves and vessels. It becomes erect during coition, and is the principal seat of the thrill or voluptuous sensation in the female. In nymphomania, or morbid sexual passion, the clitoris is sometimes cut by the knife and the parts cauterized, before this species of insanity can be permanently cured. The clitoris of the women living in a warm climate is usually larger than with those of colder zones. Such is its excessive length among the Abyssinian, Mendingan, and Ibbon women, that it is a popular usage to extirpate a portion of the obstruction. When the Abyssinians were converted to

Christianity, this species of circumcision was abolished as a remnant of paganism.

The men, however, soon rebelled against the innovation, when it became necessary for the Propagauda of Rome to send a surgeon to restore the ancient custom. The clitoris is sometimes four or five inches in length, and of the thickness of a boy's penis prior to pubescence. Such malformation has induced unnatural satisfaction of the sexual instinct between two women, or between a so-called hermaphrodite and a virgin. The so-termed "Lesbian love," or the lustful embraces of women of each other, arose from such abnormal condition of the clitoris. This revolting vice derived its name from the Island of Lesbos, where it was practiced by the celebrated poetess Sappho. In ancient Rome there was a society of these creatures who were called the "Tribades." Prior to the first French revolution, there was a similar society in Paris, who, as if to add mockery to their infamy, called themselves the "Vestals."

DELICATE CRIMSON MEMBRANE.

INTERNAL LABIA, OR NYMPHÆ.—These are two distinct folds of membranes lying within the labia majora (or external lips), and attached above to the clitoris and external labia below. Posteriorly they are closer together than anteriorly; externally they terminate in a cock's-comb-shaped, indented, free margin. They consist of a delicate crimson membrane, richly provided with nerves. Between its external and internal layers is concealed a loose cellular tissue and a number of mucous glands.

In Hindostan, Persia, and Turkey, they are much elongated, and have to be removed with the knife on account of their interference in child-birth. In labor they protrude, and are not unfrequently lacerated, at the same time protecting the external labia. Among women, who have borne many children, such elongation is very considerable.

It is only in females in whom they do not protrude, that the labia minora have the rosy color of a mucous membrane. When they protrude they become dry, hard, and assume a brown color. If the sexual organs are abused they become much relaxed, and hang down like flaps of an inch in width. Among the women of the Hottentots and Bosjemans, they are sometimer from six to eight inches long, as described by travelers. Among the northern tribes of Africa, also, they are habitually so long that they have to be cut off.

URETHRA, OR MEATUS URINARIUS.—This is the opening into the bladder—about one inch below the clitoris, and one-third of an inch above the upper surface of the mouth of the vagina. The meatus urinarius forms a small, pad-shaped ring. It is situated in a little fossa, or lacunæ, or depression. Many females are under the impression that the urine passes along the vagina. The opening into the bladder terminates externally, and on a line with the external opening of the vagina.

The internal labia give an external direction to the current of urine, and thus prevent it from passing into the vagina. It sometimes becomes necessary to draw off the contents of the bladder in females, for a considerable length of time. The patient herself, or some of her female friends, may soon become acquainted with the passage or use of the female catheter, and thus obviate the exposure which is very repugnant to a delicate female. The triangular space between the clitoris, meatus urinarius, and labia minora, is termed the vestibule of the vagina.

NOT A TEST OF VIRGINITY.

HYMEN, OR VAGINAL VALVE.—This is a thin membrane of semi-lunar shape, and stretched across the orifice of the vagina. It has generally one or more openings for the passage of the menses. Imperforated hymen has been known to cause great distress in many females, at their first catamenial flow, the discharge of blood completely blocking up the vaginal canal and extending into the uterus or womb, thus causing hysterical paroxysms and other alarming symptoms. In such cases it must be ruptured and the discharge eliminated. It is usually ruptured at the first sexual congress.

Sometimes, however, it is so tense and unyielding as to require the aid of a knife before the sexual act can be accomplished. In virgins the sexual delight is increased even by the pain which the tearing of the hymen causes.

The presence of the hymen was formerly considered a certain test of virginity, on account of its being ruptured during coition. This idea has long since been repudiated, for the hymen is not unfrequently lost through accident, diseases, etc. In many instances, it does not give way in the first or subsequent connections and pregnancy. In such cases, the spermatozoa of the male work themselves through the opening in the hymen, and finally pass up through the vagina, uterus, and into the Fallopian tubes, where impregnation occurs. Therefore, medical writers

no longer regard the presence of the hymen as proof of chasity, or its absence a proof of immorality.

The internal reproductive organs of the female consist of the Vagina, Uterus, Fallopian Tubes or Ovaducts, and Ovari.

VAGINA.—This lies between the rectum and the bladder, and extends from the external labia to the neck of the uterus or womb. It is about one inch in diameter in virgins, but much larger in those who have borne children. Its length is from five to six inches. The uterine end surrounds the neck of the womb and assists in supporting the same.

The Vagina consists of three coats or distinct membranes—the external being fibrous, the middle muscular, and the internal mucous. The latter secretes a mucus, which, when the female is in good health, is merely sufficient to keep the vagina in a moist condition. When it does more than this, the secretion is discharged externally, and called Leucorrhœa or Whites. In coition this secretion is increased. The vagina in some females contracts powerfully when stimulated by the male intromittent organ, which increases sexual pleasures during the act of copulation. The office of this organ is to receive the seminal fluid and facilitate its passage into the uterus. During menstruation it also voids the catamenial flow, and it likewise transmits the fœtus and placenta during labor.

UNNATURAL MEMBRANOUS FOLDS.

Abnormal conditions of the vagina occasionally exist. In some instances it has been found wanting, there being no trace of any canal leading to the uterus observed. Sometimes this channel is so narrow as scarcely to admit a goose-quill through its length; but such cases, however, are very rare.

A vertical septum, or partition, occasionally divides the vagina through its whole course, thus exhibiting a double vagina and a double hymen. Such malformation, however, does not prevent conception or parturition. In other instances a transverse septum may obstruct the vagina more or less completely. Such obstruction is seldom perfect; hence, as there is usually some perforation, there may be no hindrance to impregnation. Such blockade may occur at any part of the vagina, and may result from the membranous folds being unnaturally developed, or it may occur from inflammation attendant upon disease or labor. If these septums are complete, leaving no perforations, serious results may arise from the accumulation of the menstrual secretion. Laceration may occur

during pregnancy, while fistulous openings into the rectum or bladder may be formed.

The vagina is liable to various forms of disease; such as inflammation, ulceration, abscess, mortification, etc.; while cysts and tumors are not unfrequently found.

UTERUS, or WOMB.—The unimpregnated uterus lies entirely within the pelvis—the bladder being in front, the rectum behind, the Fallopian tubes on each side or laterally, and the vagina below. The form of the uterus has been compared to a flask with its mouth turned downward; also to a pear or truncated cone. Perhaps a flattened pear will convey the best idea of the natural appearance of the organ.

The uterus does not attain its full size or development until the period of pubescence. Previous to this time it is not much altered from its infantile condition. As the period of puberty approaches, there will be a gradual enlargement of the mammæ, which fact will indicate an increase in the bulk and weight of the uterus. After this period of development, it remains of the same size throughout life in the unimpregnated female. The average size of the womb at puberty, or after it has attained its full growth, is about three inches in length and two in breadth at the points of attachment to the Fallopian tubes. The diameter of the neck is much less, being usually about one inch.

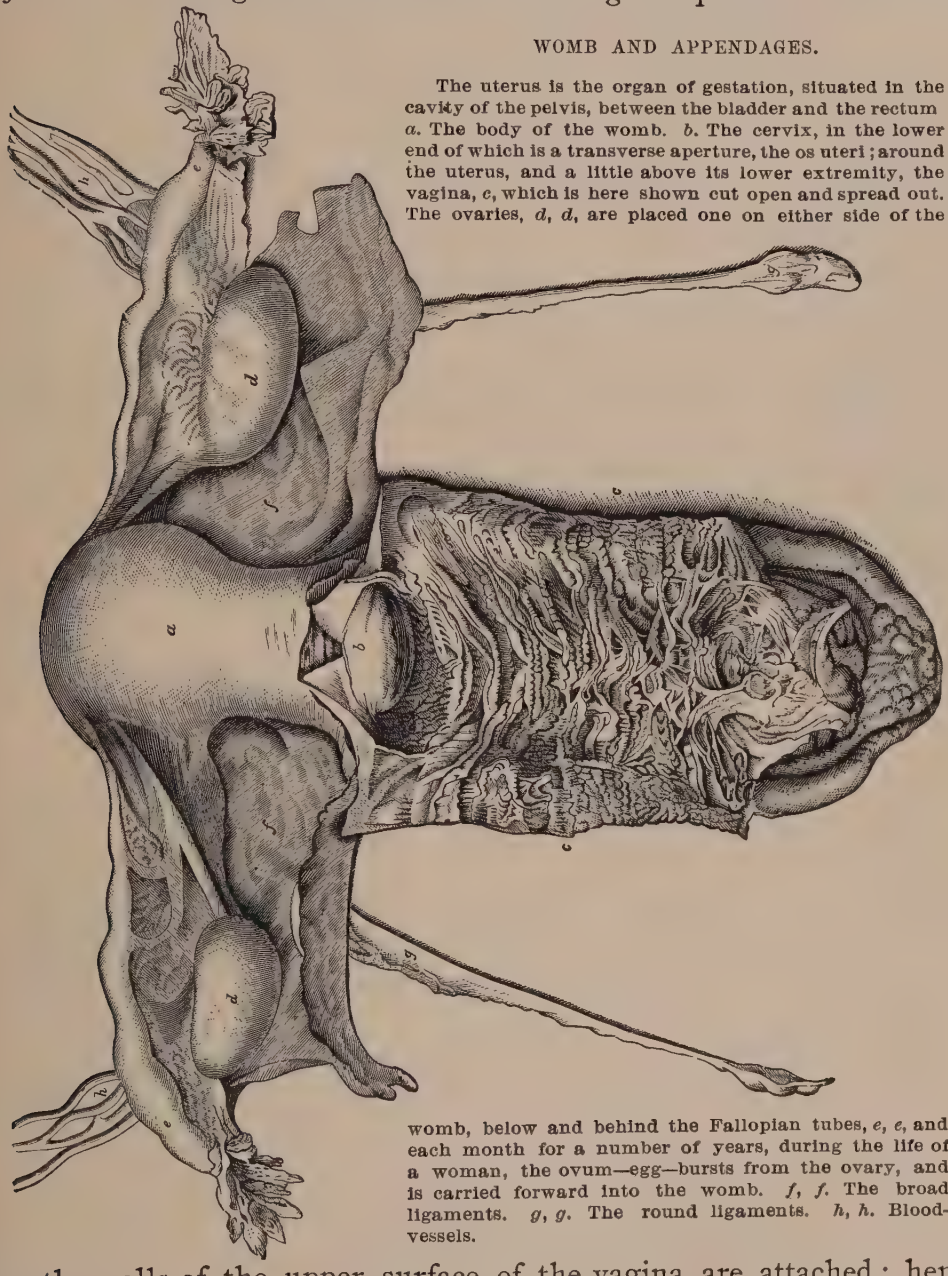
VARIOUS PARTS OF THE WOMB.

The uterus is usually divided into three parts—called the fundus, body, and neck. The *fundus* is that portion above the insertion of the Fallopian tubes. It is very dense, and firm in texture. It is a portion the least subject to disorganization from any cause. Other portions of the womb are liable to be destroyed by carcinomatous or cancerous ulceration, while the fundus remains uninjured. It is to the fundus, also, that the placenta, or the appendage that connects the unborn child with the ereother, is most usually attached.

The body of the uterus constitutes the principal portion of the organ and is that part which expands more than any other to invest the ovum. The walls here are usually half an inch thick and well supplied with blood vessels.

The cervix, or neck, is cylindriform in shape, and composed of tissue similar to the body of the uterus. The walls are about the same thickness as the body, but do not approximate, thus leaving a spindle-shaped

cavity, called the canal or cavity of the cervix. The part below the line projects into the vagina and is called the vaginal portion. Around its



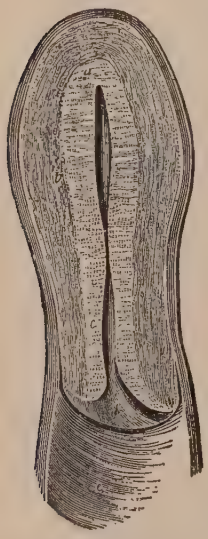
WOMB AND APPENDAGES.

The uterus is the organ of gestation, situated in the cavity of the pelvis, between the bladder and the rectum *a*. The body of the womb. *b*. The cervix, in the lower end of which is a transverse aperture, the os uteri; around the uterus, and a little above its lower extremity, the vagina, *c*, which is here shown cut open and spread out. The ovaries, *d*, *d*, are placed one on either side of the womb, below and behind the Fallopian tubes, *e*, *e*, and each month for a number of years, during the life of a woman, the ovum—egg—bursts from the ovary, and is carried forward into the womb. *f*, *f*. The broad ligaments. *g*, *g*. The round ligaments. *h*, *h*. Blood-vessels.

base, the walls of the upper surface of the vagina are attached; hence, the neck does not lie immediately within the vaginal canal, but projects from its upper wall, and is there seemingly suspended. Sometimes the

projection is so slight that there is difficulty in bringing the cervix or neck into view by means of the speculum. The position of the neck prevents the part from injury in coition.

At the apex of the neck is observed a transverse fissure, which is the terminal end of the cervical canal. This opening is called the os-externum uteri, or the external orifice of the cervical canal. This external orifice of the womb is bordered by two smooth lips, which are distinguished as the anterior and posterior lips of the os-uteri. The anterior lip is the smallest, and projects but slightly into the vagina. This unequal form of the two lips has given rise to the term os-tincæ—the orifice of the uterus.



SECTION OF WOMB.

a. Top of uterine cavity. *b, c.* Longitudinal section. *d.* Os uteri (mouth). *e.* Upper part of vagina.

In the virgin this part of the uterus is smooth and firm, like soft cartilage. After the birth of many children, it becomes much enlarged, soft, flaccid and of irregular form. The uterus being a hollow organ, possesses both an internal and external surface. The external surface is partially covered by a reflection of the peritoneum, which is a dense, smooth fibrous tissue that lines the whole abdominal cavity. It is by the reflection of this membrane that the broad ligaments are formed which we shall presently describe.

The internal cavity of the uterus in the unimpregnated state is nothing more than a narrow triangular interspace between flattened walls, which are either in immediate contact or are separated slightly from each other, and the space filled with mucus. The Fallopian tubes after passing into the uterus expand, trumpet-like, and meet the cervical canal opening upward, and the three openings expanding in this way, thus form the triangular cavity of the uterus.

UTERUS OF AN INFANT

By studying the form of the cavity of this organ, all the phenomena of the entrance of the ovum into the uterus and its detention there before it becomes detached to the uterine walls, may be perfectly understood. This cavity is lined by a mucous membrane of a pale pink color, except in cases where death has occurred during menstruation, when it is of a deep red hue. This membrane is not smooth, as it appears to be when viewed with the naked eye, but is perforated everywhere by the orifice of

minute canals or follicles. The membrane lining the cavity of the cervix or neck of the womb is arranged in numerous folds or plicæ, which gives a large amount of secretory surface to a comparatively limited space. This mucous membrane is largely supplied with crypts or follicles, which secrets copiously when diseased.

After repeated pregnancies these folds become prominent and thickened, presenting a bulbous appearance, resembling the branches of a tree; hence, the origin of the old term *arbor vitæ* (tree of life) by which this structure was commonly designated.

As before remarked, the internal surface of the uterus presents, when examined under a microscope, a large number of small follicles or canals, which pursue a tortuous or meandering course and ramify in the substance of the mucous membrane. Besides these mucous canals there is a number of small closed follicles, which have an important bearing upon the functions of the uterus.

LIKE A WAVING FIELD OF GRAIN.

All mucous membranes are formed of cells called epithelium, and arranged in several layers of cells or in a single layer. The single layer is called the cylindrical epithelium, while the several layers are called pavement or scaly epithelium. To some parts of the cylindrical epithelium, there is a small fibre-like appendage or projection, which modification is called cilia. The cilia are in motion in the living body, which motion resembles the appearance of a field of grain when influenced by the wind, causing an undulating or wave-like oscillation.

The vagina and outer portion of the cervix is covered by the scaly epithelium, which form of epithelium is never ciliated. Within the cervical canal the epithelium changes its form, becoming cylindrical and ciliated. Above the cervix it again becomes changed to the pavement or scaly epithelium. It will be necessary to allude to the different forms of the epithelium of the uterus when treating of leuchorrhœa and conception.

It is supposed that the movement of the cilia is to assist the spermatozoa of the male semen in passing into the uterus through its cervical or narrow portion. Immediately below the epithelium membrane and upon which it rests is a thin layer of albuminous liquid, called basement membrane, containing numerous granules, which form the nuclei of the cells of which this membrane is composed. This liquid is the matrix of

these cells, and is derived from the blood vessels, which form a capillary network, underlying the whole epithelium surface.

The lining membrane of the uterus, with its crypts and ramifying follicles or canals, secrete a mucus, which is eliminated or poured out upon its surface, keeping it in a moist condition, when the female is in good health. When the same membrane is inflamed, or irritated, the secretion is increased and changed, constituting disease.

The body of the uterine walls consists of muscular tissue, lined, as before stated, on the outside, by reflections of the peritoneum, which line the whole abdominal cavity, and internally by the epithelium or mucous membrane. This portion of the uterine walls is remarkably firm and solid, and constitutes the greatest bulk of the organ.

BLOOD VESSELS AND NERVES.

All muscular fibre in the living body possess inherent contractile power, which is made manifest when a stimulus is applied. In the uterus, after the fœtus has arrived at maturity, which is nine lunar months, there is a peristaltic contraction taking place, but which does not extend to all parts of the muscular tissue of the uterus alike. The object is to press out the contents of the cavity; hence the contraction or force must be applied to the fundus and body of the uterus, while that of the cervix becomes relaxed.

In this way contraction of the upper and relaxation of the lower part of the uterus continues until the fœtus is expelled into the vagina. The contractile power of the uterine walls is dependent upon an exciting cause —which cause is, no doubt, that of the fœtus increasing in innervation or nerve-force, which, acting upon the muscles, causes the peculiar contraction in child-birth. The uterus is largely supplied with blood-vessels, lymphatics and nerves. The nerves are derived from the spinal and sympathetic nervous system.

Ligaments of the Uterus.—These terms are applied to several duplications of the peritoneum, as well as to strands or bands of muscular or fibrous tissue. The ligaments connect together the appendages of the uterus, support it, and limit its motion within the pelvis. There are four of these ligaments—the round, broad, utero-sacral and the utero-vesicle.

Round Ligaments.—These are sometimes called the sub-pubic ligaments. They consist of flattened cords or bands of muscular and fibrous tissue. These bands arise in the tendons of the internal oblique and

transversalis muscles of the abdomen, near the symphisis pubis, or front bone of the pelvis, and are inserted into the uterus near the commencement of the Fallopian tubes. The ligament of the right side is generally shorter than the left. Hence in pregnancy the uterus usually inclines to that side. The round ligaments are composed of smooth muscular fibres arranged in bundles and derived from the uterus.

Broad Ligaments.—The peritoneum, after covering the front, back and fundus of the uterus, extends off in two folds or layers to the side and base of the pelvis, to which they are attached. By the arrangement of these ligaments the cavity of the pelvis is divided into two chambers—the anterior one containing the bladder, and the posterior, or deeper, holding the rectum and portion of the small intestines—while the uterus occupies the septum between them.

THE FALLOPIAN TUBES.

To the upper border of the broad ligaments are three folds, called the lesser wings. The central or superior of these contains the Fallopian tubes, and is called the mesentery of the tubes. The smaller posterior fold invests the ovary, together with its proper ligament; while the third or anterior fold inclines obliquely toward the uterus, and constitutes the covering of the round ligaments. Between the laminæ or folds of these ligaments are found the blood-vessels, lymphatics and nerves, which supply the uterus and its appendages. The broad ligaments are considered by some writers more as a mesentery than a ligament, on account of their investing the uterus. Its appendages are attached to the pelvis in the same manner as the mesentery attaches the intestines to the spine—the space between the folds sufficing for the conveyance of the blood-vessels and nerves.

The Utero-Sacral Ligaments.—From the back side of the neck of the uterus, two folds of peritoneum proceed toward the rectum. Between these two folds are two corresponding bands of fibrous tissue which extend from the substance of the neck or cervix of the uterus and are inserted into the sacrum. The office of these ligaments is to prevent the womb from being forced upward in the act of conjunction, and to limit the descent of the organ in an erect posture of the body.

The Utero-Vesicle Ligaments.—Opposite to the point of junction of the body and neck of the uterus, where the peritoneum is reflected forward on the bladder, are observed two lateral folds containing bundles

of fibrinous tissue. These constitute the anterior or utero-vesicle ligaments.

Fallopian Tubes or Ovaducts.—The Fallopian tubes are the excretory ducts of the ovaries. The Fallopian tubes differ from the vas deferens, as well as every other excretory duct in the animal economy, on account of being entirely detached from the glands or ovaries. The Fallopian tubes or ovaducts are equally developed on both sides of the body in all vertebrate or back-bone animals, except in the class of Aves or birds. With this class the right tube becomes atrophied, or enlarged, at an earlier period, while the left continues to develop.

Each ovaduct has the form of a conical tube, the base of which being free and directed toward the ovary, while the apex is attached to the uterus. The shape of the tubes resembles a horn or trumpet, particularly when straightened out. The length of these tubes varies in different subjects, but the average length is four and a half inches. The diameter of the tubes will only admit of a bristle, but the canal at its external or free surface will admit of a quill of ordinary size. The outer edge of the tubes are broken into a number of fringe-like processes of unequal length, constituting the fimbriated portion, or *corpus fimbriatum*, in the centre of which is seen the orifice called *corpus abdominali*.

PINK LAYER OF TISSUE.

The tubes themselves are composed of strong fibrous tissue, similar to the uterus, and are invested, like the latter organ, with the peritoneum, by being placed between the folds of the broad ligaments as before described. The internal coat is a mucous or epithelium membrane, but different from that which lines the uterus. Here are found no crypts or follicles as exist in the lining membrane of the uterus, but a very delicate pink layer of undeveloped tissue, mixed with numerous formative cells.

Under ordinary circumstances, and when these organs are in health, the canals of the Fallopian tubes contain only a small quantity of viscid mucus. When death takes place during the menstrual period this fluid is found to be replaced by uncoagulated blood of a dark color. The fimbriated, or fringed portion performs an office of more importance than it usually has the credit of doing. It is this portion of the tube that grasps the surface of the ovaries, receiving and conveying the ova to the uterus.

From illustrations given in works a very poor idea of the beauty of this structure can be obtained. To comprehend the wonderful peculiarity

of the delicate plicæ or fringes with which the expanded mouthpiece of the tubes are beset, they should be examined under water. When thus inspected in the young and healthy subject, the funnel-shaped projections are arranged in numerous folds and leaflets, which are merely continuations of the similar plicæ which line the cavity of tubes. The office of these delicate and down-like folds is doubtless to receive and entangle the delicate ovum in one of the numerous channels which are formed between the leaflets and to conduct it into the cavity of the tube toward which they are diverged.

There are a great variety of forms of these funnel-shaped projections —no two subjects presenting the same appearance. They seem to bear a certain relation to the age of the persons in which they are found. In the young subject at the age of puberty, and in those who have borne a few children, they exhibit that richness and profusion of folds already described.

AN IMPORTANT LIGAMENT.

Tubo-ovarian Ligament.—This so-called ligament consists of one of the fimbriæ, or fringes, prolonged upon the outer margin or base of the broad ligament or mesentery of the tube. It was supposed by the older anatomists that the office of this ligament was to draw the end of the tube upon the ovary. This view is not entertained at the present day. Its office is to keep the fimbriated extremity of the tube within a certain distance of the ovary, and permit the orifice to be easily applied over the gland or ovary when it is required. By this arrangement the tube is enabled to enclose any portion of the ovary that may be needed. This ligament is one and a half to two inches in length.

Office of the Fallopian Tubes.—The Fallopian tubes perform a double office, receiving the ova from the ovaries, and conveying them into the uterus, and also receiving the spermatic fluid of the male and conveying it from the uterus in the direction of the ovaries, the tubes being the seat of impregnation.

These conclusions are derived from observation upon mammalian animals as well as the human female, the functions in either case being essentially the same. It is accordingly quite clearly demonstrated that the office of the fimbriated extremities of the Fallopian tubes is to become expanded over a certain portion of the ovaries—the extent of the surface depending upon the relative size of the ovaries.

In some mammalia, as the cat, for instance, the extremity of the tube is sufficiently large to encompass the entire ovary, so that an ovum escaping from any part of its surface, will be conveyed or fall into the orifice, and be drawn into the canal. In many other animals, however, as well as in the human female the size of the tube is only large enough to cover one-third or one-half of the ovary at one time, so that in all cases, a selection must be made of the exact spot where the ovum is discharged, or else the ovum will be lost by falling into the cavity of the abdomen.

Sterility in the female is sometimes caused by a morbid adhesion of the tube to a portion of the ovary. By what power the mouth of the tube is directed towards a particular portion of an ovary, from which the ovum is about to be discharged, remains entirely unknown, as does also the precise nature of the cause which affects this movement.

MOVEMENT CAUSED BY CONTRACTION.

The tubo-ovarian ligament serves at all times to keep the extremity of the tube in contiguity with the ovary, but by what agency the orifice of the tube is drawn toward and the fimbriæ become expanded upon the ovary cannot be satisfactorily explained. The only way to account for the movement is the contraction of the low contractile form of fibre of which this ligament is composed, which is found in some of the lower-order animals.

It was formerly supposed that the approximation of the mouth of the tube and the ovary occurred under the influence of sexual orgasm—an inference natural enough so long as it was believed that the ova were discharged from the ovary during and as a consequence of sexual congress. This cannot, with our present knowledge of physiology, be admitted; for it is now a well-settled fact that in all mammalia, including the human female, the discharge of the ova or eggs takes place during the menstrual discharge and not during sexual congress. The approximation of the Fallopian tube to the ovary at such times is to be regarded as a movement providing for a safe passage of the ova to the uterus, and not that the venereal orgasm is the cause of the movement.

The period of time occupied for the passage of the ovum through the tube is usually a few days. In the bitch, the ovum remains in the tube susceptible to impregnation during six or eight days. In the guinea-pig and rabbit, the ovum makes its transit in about three days. Less is known respecting the time of such passage in the human female. With

the exception of abnormal cases, there are but two instances recorded in which the human ovum has been actually seen on its passage to the uterus.

An attempt has been made to ascertain the time an ovum is passing in the human female, by comparing the condition of early ova found in the uterus or prematurely expelled from this organ, with the last known date of intercourse or of menstruation, but neither of these modes of calcution can afford any certain information. The analogies furnished by observation with the higher order of animals lead to the supposition that the time occupied for the passage of the ovum through the tube in the human female is not materially different from that of animals, which is from six to twelve days.

TWO-FOLD OFFICE OF THE TUBES.

The office of the tubes, as before intimated, is two-fold, namely, the passage of the ovum from the ovaries to the uterus, and for the conveyance of the spermatozoa toward the ovaries. The rapidity with which the spermatic fluid is capable of reaching and entering the Fallopian tubes in some animals is very remarkable. Bischoff observed spermatozoa in the ovaduct of a guinea-pig in three-quarters of an hour after coitus. The power by which the semen reaches the tubes is partly by its ejaculation from the male organ toward the mouth of the uterus, and by the ciliary covering of the membrane lining the neck of the womb, which assist the movements of the spermatozoa to ascend into that organ, by their own inherent power.

In this way they are enabled to pass up into the tube, where their progress is then arrested by the cilia lining, the tubes having a downward movement for the purpose of conveying the ova toward the uterus, and retarding the movement of the spermatozoa. By this arrangement of the ciliated lining membrane, the egg or ovum and spermatozoa are brought together in the middle and lower third of the Fallopian tube, where impregnation usually occurs.

In order to show the precise limits of the functions of the ovaducts, it will be necessary to examine particularly the evidence which serves to show that the ovary is the part in which the ovum is formed, and that the uterus is the place in which it is inverted or developed; and also that the Fallopian tubes are the conducting media by which the ovum is transmitted from the formative to the recipient organ: likewise that these

tubes are the seat where the ovum becomes impregnated by contact with the spermatozoa while on its passage to the uterus. One of the most remarkable circumstances connected with the generative process is the periods of separation of the ova from the ovary and their passage along the Fallopian tubes to the uterus.

Defects in the Fallopian Tubes.—Chaussier mentions the case of a woman who, notwithstanding she had but one ovary, one Fallopian tube, and one side of the uterus absent, had borne ten living children. Her death having occurred a short time after the birth of her last child, a good opportunity was afforded for examining the parts, when this curious fact was abundantly established. Hence the absence of one tube and ovary will not cause sterility, although such a misfortune must necessarily follow when they are entirely wanting. Sometimes the tubes are short, and there may be an absence of the fimbriæ. The former might not cause sterility, but the latter would.

Adhesions not unfrequently take place from inflammation between the tubes and peritoneum and intestines, which is apt to displace the arrangement of the parts. This is one of the most frequent causes of sterility, and is of that nature that cannot be obviated. The tubes may become distended with blood accumulated from the menstrual flow. A case of this kind is stated in the American Journal of Medical Science. It is that of a woman who, after her second confinement, had an attack of inflammation of the uterus, which terminated in a union of the uterine walls. Behind this obstruction the menstrual flow accumulated until the Fallopian tubes became enormously distended, when, at length, one of them burst, thereby causing death from the escape of blood into the abdominal cavity.

THE HUMAN OVARIES

CHAPTER VII.

THE ovaries constitute the glands appropriated to the formation of the female ova, or eggs. The ovary is not fully developed until about the period of puberty. It is usually about the size of a large chestnut when fully developed, their weight being not much more than an ounce. They lie imbedded in the broad ligaments, between the uterus and fringed extremity of the Fallopian tubes. Besides the connection which it has to the uterus through the intervention of the broad ligaments, it has another uniting it to the womb, known as the ovarian ligament, while it is also connected to the Fallopian tube by another ligament.

During pregnancy the ovaries change position. As the uterus expands, it carries them along with it into the abdominal cavity.

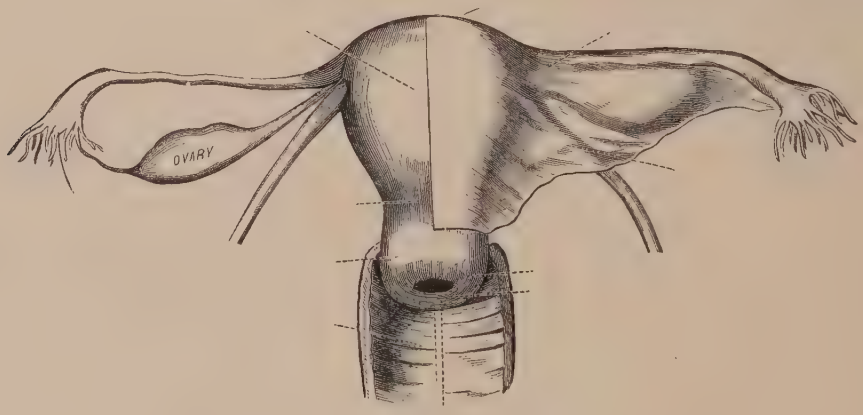
The ovaries, like the uterus and Fallopian tubes, are covered with the peritoneum, derived from broad ligaments, which form their outer covering. Below this outer coat we find another, composed of dense fibrous tissue, which forms a complete investment for the ovary.

OVASACS OR GRAAFIAN VESICLES.—On cutting into a healthy ovary of a subject not too far advanced in life, a number of small vesicles or bladders (so small as to require the aid of the microscope to see them) may be readily separated. These vesicles are named after De Graaf, their discoverer. In infants and young subjects these vesicles or ovasacs are found only upon the periphery, where they form a thick rind. The spaces between them are filled with blood-vessels and fibrous tissue, the latter affording support for the vessels, and is called, as before stated, the stroma.

After puberty these ovasacs become buried deeper in the structure, even to the very base of the organ. They are always, however, the most

numerous upon the outer surface. The number of developed vesicles in each ovary visible to the naked eye was formerly computed at from twelve to twenty, while it was supposed that when these were exhausted by child-bearing and miscarriage, the power of procreation ceased. Recent and careful observation, however, has shown that the number of vesicles in each ovary amounts to thirty, fifty, one hundred, and even two hundred, while in very young subjects the number exceeds all computation.

The vesicles are most easily seen in the adult ovary by making a perpendicular section. In this way from ten to twenty may be brought in view. A similar section in the ovary of an infant, and examined with a microscope, will reveal several hundred. Each Graafian follicle or



STRUCTURE OF THE WOMB AND ITS APPENDAGES.

ovasac is of an oval form, the contents of which will be now carefully analyzed in order to have a clear comprehension of the changes which occur in them during pregnancy and which result in the formation of the body.

STRUCTURE OF GRAAFIAN FOLLICLE.—Each Graafian follicle is lined by three distinct membranes:—*External, Fibrous or Vascular.*—This membrane closely embraces the ovasac and is derived from the parenchyma or stroma of the ovary. If examined with the microscope, it will be found very vascular. Its office is to give increased support and protection to the ovasac which it surrounds.

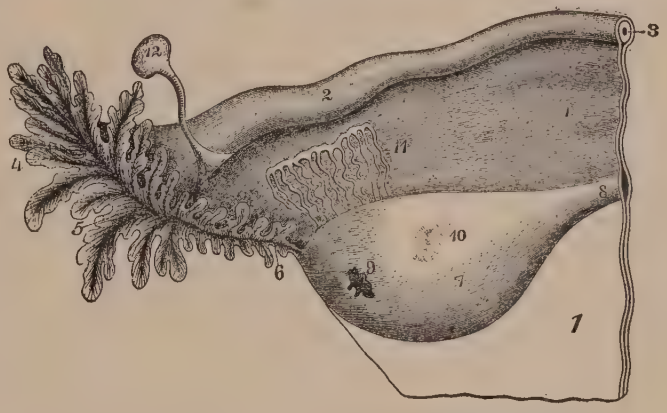
Second or Middle Coat.—This is an independent membrane, and in uniting with the external, forms the Graafian follicle.

Internal Lining, called Epithelical Membrane or Membrane Granulosa.—This membrane consists of nucleated cells forming an epithelial

lining, the cells of which are so lightly held together that it is doubted whether it is entitled to the name of membrane. This structure plays an important part to the ovum, which is always found lodged within it. As the ovasac develops, this membrane arranges itself into three distinct layers of granules.

As this part of the descriptive anatomy seems intricate and difficult for those unacquainted with the structure of these parts, a more general and familiar explanation will be presented to the comprehension of the ordinary reader.

The ovary may be compared to a honey-comb, the walls of the comb formed by stroma or parenchyma, as already described, lining these cells; or, the Graafian vesicle is two membranes, which we will call the inner and outer coat of the Graafian vesicle. Besides this, there are a number of cells which De Graaf divided into three distinct layers or distinct membrane. In the midst of these cells is found the little ovum imbued with all the peculiarities of its parent, the human female, and destined to become a living being endowed with physical and spiritual life. Besides this structure, the Graafian follicles contain albuminous fluid of a slight yellowish color, which is coagulable by heat. In this fluid float granules and oil globules.



OVARY AND FALLOPIAN TUBE OF THE LEFT SIDE.

1, broad ligament; 2, Fallopian tube, or ovaduct; 3, its canal; 4, its fimbriated extremity; 5, mouth of the latter, or pavilion; 6, process attached to the ovary; 7, 8, ovarian ligament; 9, orifice from which an ovum recently escaped; 10, a cicatrix; 11, parovarium; 12, remains of the duct of Müller. From a virgin about eighteen years of age.

Office of the Ovary.—The ovary is to the female what the testis is to the male. It is the germ-preparing organ, and therefore the most essential part of the generative apparatus, all the other structures being only its accessories. The ovary is not merely an organ for the formation of the ova, but is designed also for their separation and expulsion when they have reached maturity. This process is usually termed ovulation, and takes place without the assistance of the male. The ova which are formed at an early period are not called into activity until the system is

sufficiently developed for the parturient act to take place without serious detriment to the system.

In some of the lower orders of animals the whole of the vital energies of the parent is exhausted by one effort of reproduction. It is probable that long before the time arrives for the development of the ova, many of them have perished, their places being continually supplied with new formations. On the other hand, at the decline of life the power of reproducing and emitting ova altogether fails. Hence the limitation of the office of reproduction is alloted to that period in which the vital energies are at their fullest vigor, when the parent may transmit to the offspring a strong and vigorous constitution.

WEAK PARENTS AND UNHEALTHY OFFSPRING.

Most parents overlook the fact that all the weaknesses, peculiarities and eccentricities of the parent are conveyed to the germ at the time of conception, and will unfold with it and become part and parcel of the constitution of the new being. Until this is fully realized by parents and the difficulty remedied, it is but reasonable to suppose that the vital stamina of each subsequent generation will greatly degenerate or deviate from perfect original or normal health. There is not an observant physician living who is not able to trace distinctly the weaknesses and constitutional imperfections of the parents, and show that they are more fully developed in the offspring, when they partake of them, than in the parents themselves.

The husbandman expects when he plants imperfect seed to reap the fruit of such labor. That same is the case in raising unhealthy stock. "A corrupt tree cannot bring forth good fruit," neither can an unhealthy human being generate vigorous offspring. The principles of nature are self-apparent in this regard. There can be no violation of her simple laws without entailing some evil or abnormal consequence.

From what has been already stated, it will be perceived that the ovary in the human female has three noticeable periods. The first is that of preparation, extending from birth or infancy to puberty. The second is that state of activity which extends from puberty to the decline of life; and the third period is that of decay during the decline of life.

The First Period—Origin of the Graafian Vesicle.—There has been found no trace of the Graafian vesicles before birth. The first evidence we have of their formation is soon after birth, when they consist of a little transparent vesicle surrounded by granular cells, which are filled with a

clear fluid containing cell nuclei and granules. Surrounding this are observed traces of the ovasac becoming developed, which continue until a Graafian vesicle is formed. If the ovary of an infant be examined, when it is a few months old, by dividing it longitudinally, it will be seen that the outer surface contains a large number of Graafian vesicles and ova in various stages of development, while the central part is made up of blood vessels and connecting tissue, which ultimately becomes similarly formed to the outer or peripheral portion.

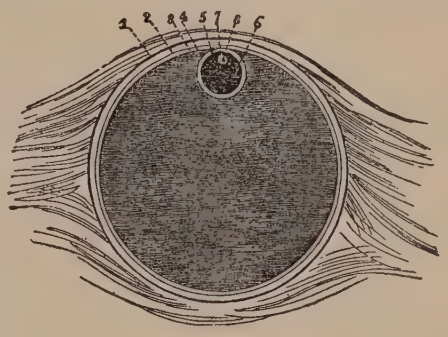


DIAGRAM OF A GRAAFIAN VESICLE CONTAINING AN OVUM.

1. Stroma of the tissue of the ovary. 2 and 3. External and internal tunics of the Graafian vesicle. 4. Cavity of the vesicle. 5. Thick tunic of the ovum or yolk-sac. 6. The yolk. 7. The germinal vesicle. 8. The germinal spot.

The Middle Period, or Second Stage of Growth and Maturation, is the one to which the most interest is attached. During certain portions of this period or epoch the ovary is employed in ripening and emitting ova, and is a periodic occurrence in the human female as well as in the various orders of animals. The emission of ova will occur at different periods in different animals, these differing again from those occurring in the human female.

In the roe, for instance, Bischoff has discovered that she emits ova only once a year, which is the latter part of July and during August; and also that it is only at this period of the year that the ovary of the female contains ripe ova and the testes of the male ripe semen; hence, this is the only time when the animal can become impregnated.

In many animals the ripening of the ova and discharge occur more frequently. Especially is this the case in the human female, such periodicity occurring, no doubt, once a month, or during the menstrual discharge. This will be found more fully demonstrated in the article on Menstruation.

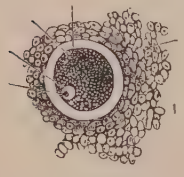
The office of the ovary from puberty to decline of life, is to mature ova and discharge them monthly, during which operation the whole energy of the ovary is called into action. After an ovum has been expelled, the wound made in the walls of the ovary becomes healed, and the action is transferred to another set of follicles, which ripen and pass through the same order of changes as before.

The ovary cannot be said ever to be, during this period of life, in a

perfect state of rest. New ova are all the while undergoing development; hence, ova may be found in the ovary in all stages of ripening.

There are two circumstances which arrest the process of ovarian development, namely, utero-gestation or pregnancy and lactation or nursing. Occasionally exceptions may be made to this rule; nevertheless, the evidence collected favors the belief that pregnant women, and those who suckle, emit no ova during the continuance of either.

When the period approaches, or has already arrived at which the female is in a condition to propagate, and ready to receive the male, a number of Graafian follicles increase in size and approach nearer the surface of the ovary, presenting the appearance of round grains, so close set as to give the semblance of a bunch of grapes. When these enlarge in size it is occasioned by an increase of the fluid in the follicle, the same being supplied by the minute capillaries or blood-vessels, giving it a bright red color. While these changes are going on within the follicle, preparations are being also made externally for the rupture of the walls of the ovary. The part to be thus broken becomes exceedingly red from the accumulation of blood while the membrane which encloses the Graafian follicle becomes thinner and thinner, by pressure and absorption, until they are finally ruptured, and the ovum expelled, leaving a clot of blood and a bloody fluid.



THE OVUM, AND ITS VITAL CENTRE.

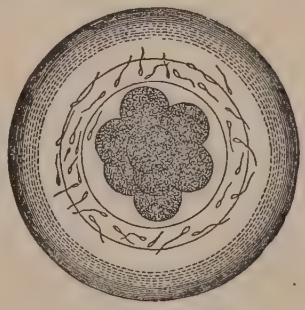
If an examination be made of a healthy woman who has previously menstruated regularly up to the time of death, there will be found in each ovary one or more Graafian follicles in the condition just described. As the Graafian follicles repair, they come toward the outer margin or periphery. Only one of these ripens, as a general rule, at one time. Sometimes two or three are developing and preparing for being ruptured at the same period. If the bloody fluid be washed out of the Graafian vesicle after the ovum has been expelled, its inner surface will be found intensely red, looking like an inflamed surface.

Period of Rupture of Graafian Follicle and Escape of the Ovum.—This period is called by Pouchet the period of parturition of the follicle. This is after the ovum has passed through its various changes of development, and is expelled from the Graafian follicle in order that it may enter the Fallopian tube. Therefore the ovary is to the ovum what the womb is to the fœtus. It nourishes it, and when it is matured, expels it into the Fallopian tube, where it passes through other changes,

provided it becomes impregnated by the spermatozoa while traversing this channel.

In animals where the egg is large, it (the egg) will assist in rupturing the ovasac. In the human female the ovum is too small to effect any such purpose in order to liberate itself. It lies in the Graafian vesicle perfectly passive and uses no mechanical effort whatever for its own liberation. The process by which this takes place is compared to the bursting of an abscess, with which mode of rupture nearly every person is familiar. The accumulation of the liquid before described within the follicle causes a pressure against its walls, and this kept up for a short time, will render them so thin by absorption, that a very slight force is sufficient to rupture the sac and expel the core and contents of the same.

In the human female two or more follicles may become matured or ripened at the same time, and burst simultaneously. Should this occur, and each become impregnated in the Fallopian tube, they will severally develop a new being. In this way twins and triplets are produced at the same time.



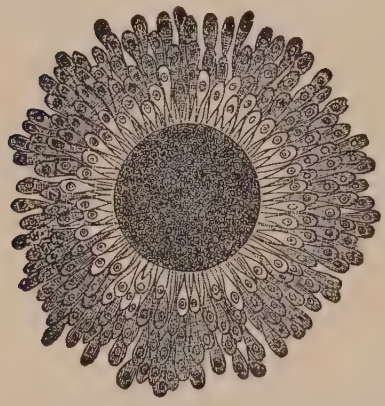
LAYER OF ALBUMEN IN THE LOWER PORTION OF THE TUBE (OBSERVED ONLY IN THE RABBIT).

There are some remarkable features about the healing of the rupture of the membranes of the Graafian follicle, after the ovum has been expelled, as well as in the changes that take place in the follicle itself. The changes are very different if pregnancy does not occur after the ovum is expelled, from those changes which take place when impregnation is effected. In order to the comprehension of this subject in a proper manner, it will be necessary to speak first of the changes that take place in the follicle and its obliteration without pregnancy, and those which occur when fecundation follows the rupture.

Without Pregnancy.—Immediately after the expulsion of the ovum, the ruptured membranes gradually approximate, the redness disappears, and an exudation is thrown out, which causes the part to become agglutinated, precisely as is observed in a boil after it has discharged its contents. When the parts become united there remain the common cicatrix observed in the healing of other tissue. While the healing is going on, the follicle itself shrinks to a very small dimension, and by the time one or more follicles have passed through the same series, which will

require a month or two, the cavity of the follicle will be shrunk so as scarcely to admit of a body of the size of a small pin-head, the membrane lining the same appearing puckered. The follicles continue to decrease in size until they become entirely obliterated, giving room to other vesicles or follicles, which pass through the same stages of growth and decay. By this frequent obliteration of the follicles, which is continually taking place during the menstrual period of the female, the ovaries, in advanced life, exhibit a large number of pits and furrows, at once affording a striking proof that the discharge of ova or eggs from the ovary occurs independent of sexual congress.

After Pregnancy.—Very different are the changes which take place in the Graafian follicles when impregnation occurs from those which appear in the absence of impregnation. In both cases, it is true, there is the same obliteration of the follicle, but in the latter it is much slower than in the former case. The cicatrix will form in about the same time in each, while the obliteration of the vesicle after pregnancy may not be effected under thirteen or fourteen months. This process is also upon a very extensive scale. When impregnation has occurred, all parts of the generative apparatus are brought under the influence of a common stimulus.



RIPE OVUM SURROUNDED BY CELLS

This is particularly the case with the uterus, which very soon receives a large supply of blood. The blood vessels of the ovaries and uterus, together with their nerves, being so intimately associated, any stimulation of either will act similarly upon all the others. The vessels becoming loaded with blood, a greater amount of vital action takes place both in the ovary and the uterus. This is not the case when impregnation does not occur. When the ovum is thrown off from the ovary, it gradually subsides into a quiescent state, while the lacerated membranes of the vesicle and ovary unite and thus obliterate the follicle.

The stimulus consequent upon the union of the male and female germ seems to retard these changes—setting up new ones, that accomplish the same ends, although requiring a longer time for their accomplishment. In impregnation, the inner membrane of the follicle becomes thickened by a deposit of yellow oil granules. The Graafian follicle, at

the time of rupture, may occupy from one-fourth to one-half of the ovary, and will continue to occupy this space until the third or fourth month of pregnancy; while if this does not occur the follicle will disappear in a month or two months. After four months of pregnancy, the follicle gradually diminishes—the inner coat rapidly increasing by a deposit of the oil globules, and this thickening encroaching upon the cavity, causing its diminution. The parts surrounding the follicle at this time become hard and swollen; likewise the ovary, which is larger than its fellow.

The deposit of thin yellow oil globules within the follicle has given rise to the supposition of the formation of a new membrane, thus leading to erroneous conclusions. After the fourth or fifth month of pregnancy the follicles begin to diminish more rapidly and so continues until the time of birth, or nine months, when the ovasac will have lost much of its brightness, the cavity being nearly filled. Some four or five months after delivery, the cavity is entirely obliterated, the yellow appearance subsiding into a pale or white line, the cicatrix also disappearing meanwhile.

Does the Discharge of Ova Take Place without Sexual Congress?—Much controversy has occurred, at various times, in regard to the discharge of the ovum. All observers down to Barry contend that coitus was the sole cause of such phenomena, and that it could only take place during sexual congress. Late observers have exploded this idea. Coste, Bischoff and other modern physiologists, now regard coitus as having nothing to do with the discharge of ova, and clearly demonstrate that they ripen and are discharging periodically without reference to conjunction, and thrown off from the uterus. This is the case in all mammalia, including the human female. This subject will be found more fully treated in the article on Menstruation.

EFFECT OF IMPREGNATING THE OVUM

CHAPTER VIII.

THE period of decline of life commences at the termination of the catamenia, or menstrual flow, when, if the ovaries be examined, they will present a wrinkled, corrugated appearance, full of pits and tortuous lines. If a section be made in the ovary, there is found no trace of Graafian follicles, or one or two may be observed disintegrated into small masses or sacs of cartilaginous hardness. Generally, however, nothing remains except the dense parenchyma or stroma which forms the interior of the ovary.

On the other hand, if the ovary be examined from puberty to the critical period or change of life, it will be found largely supplied with blood-vessels, which may be seen ramifying all its parts. After the process of ovulation has entirely ceased, the ovary begins to suffer the wasting of age, presents a general pallor, and receives only that sufficiency of blood to answer for the nutrition of the shrivelled organ.

EFFECTS OF EXTIRPATING THE OVARIES.—The removal of one ovary does not affect materially the reproductive power. Hunter, in order to test the effects of extirpating one of them, procured two young sows of the same farrow, and removing one of the ovaries from one of them, kept both animals under the same circumstances, in order to observe the effects of breeding upon them. They commenced engendering when two years old, the spayed animal took the boar earlier than the perfect female, and both continued to breed at nearly the same time. The mutilated sow produced her litters until she was six years old, at which time she had had eight farrows and brought forth seventy pigs altogether, and would

not take the male afterward. The other continued breeding until she was eight years old and had thirteen farrows, yielding one hundred and sixty-two pigs, when she ceased to breed. The result was that the perfect animal continued to breed two years longer, and produced more than double the number of the spayed one.

Mr. Potts removed both of these organs in the human female, in the St. Bartholomew's Hospital, on account of swellings of both groins attended with much pain. The woman was in full health, large-breasted, and had menstruated regularly. These tumors proved to be the two ovaries, which had descended in the form of double hernia. The woman subsequently enjoyed good health; became thinner and more muscular, while her breasts disappeared and her menstruation ceased altogether after the operation.

DEVELOPMENT OF OVARIES ARRESTED.

An interesting example of the arrest of development of the ovaries is preserved in the Museum of King's College, London. The preparation consists of the entire internal organs of a young woman who died at the age of nineteen, without having menstruated. The ovaries, as well as the rest of the organs, are no larger than a child's of three years. The mammæ are small, the external organs only partially developed, while the whole frame is formed upon a very feeble scale.

The ovum may be described as a spheroid mass of organized substance, enclosed in a vascular membrane, and when fecundated by the sperm of the male, undergoes various changes or development until it is unfolded into an embryo. All animals with the exception of some of the lower, as the Infusoria, propagate their species and maintain them by means of the ova and sexual generation. It seems to be a law of Nature that species can only be propagated in this way. The result of fecundation is the formation of an embryo from the ovum, which by progresssive growth arrives at maturity and assumes the form, structure and habits, as well as weaknesses and imperfections, of its parents.

The ovum has two phases or stages of existence. The one is in connection with the female organ, which provides material for its development until it arrives at the stage of maturity, when it is expelled from its bed or Graafian vesicle. The other is the influence exerted over it when it comes in contact with the fructifying principle of the male, in which a new power is awakened and developed. The ovum, therefore, cannot be

considered as having arrived at maturity (though such is the case, so far as its own structure is concerned) until it is united to the spermatozoa of the male; for without it, its progress is arrested so far as regards its ultimate development.

The eggs of different animals vary in size. The eggs of birds increase in size in relative proportion to the size of the creature. The eggs of the Æpyorus, an extinct bird, is very enormous. The remains of one of these, with its eggs, were recently discovered in Madagascar. The circumference of this egg, in its long diameter, is said to be three feet, and its short diameter two feet four inches. It must have contained within its shell, according to M. Isidore Geoffroy, ten quarts, or nearly six times as much as an ostrich's eggs, or one hundred and forty-eight times as much as an ordinary hen's egg, or fifty thousand times as much as a humming bird's egg.

Number of Ova.—The number of ova developed in the female sex during the whole of her life, vary very much, and probably cannot be ascertained.

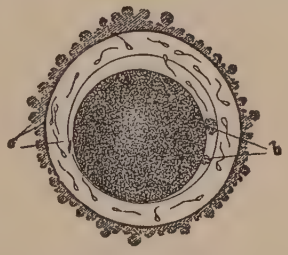
GREAT QUANTITIES OF EGGS.

The ovaries of some kinds of fish, especially the herring and the halibut, have been found to contain a vast number of eggs. The African ant is known to lay thousands of eggs every twenty-four hours. In short, all through the animal world wonderful provision is made for the reproduction of the species. In birds and those animals that have large eggs only a few of them arrive at maturity. In the common fowl that lays daily two-thirds of a year, a product amounting to thirty pounds, or ten times the weight of the animal, is the result, while the number of eggs produced in the course of the bird's natural existence will not be less than twelve hundred. The number of ovula in the common hen will amount to thirty or forty thousand; hence, as twelve hundred eggs are only produced on an average from each, it will be seen that a large number of ovula never arrive at maturity.

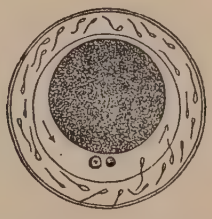
In the human female but few ova ripen or come to maturity at a time. Thus several ova may be discharged at every menstrual period for about thirty years of life. The number thus discharged can scarcely be less than four hundred (probably many more), each one of which if fully developed, by being brought in contact with the fructifying seed of the male, would be capable of bringing forth a living being. It has been stated that the human ovum is about one hundredth of an inch in diameter,

or of the size of a pin's point; but small as it is, each one is capable of unfolding a human being.

It is interesting to trace the ovum and observe the changes which take place as it passes through the Fallopian tubes. Its development in the ovary and expulsion therefrom has already been noticed, while a description of its structure has been given, together with the manner in which the fimbriated portion of the tube has grasped the ovum. As these changes take place before the egg reaches the uterus, it will be necessary to dwell somewhat particularly upon such processes or phenomena. This part of the subject will be better understood by presenting everything that necessarily has a bearing upon all such changes. The changes that take place in the ova of animals, during their passage along the tubes, will also be explained, as there is a close analogy between the functions of the reproductive organs of animals and the human female.



THE OVUM ON ARRIVING IN THE FALLOPIAN TUBE.



THE OVUM SLIGHTLY ADVANCED IN THE TUBE.

The way in which the ovum is conveyed along the passage of the Fallopian tubes after its reception in the fimbriæ of the ovaduct, is explained by the peculiar structure of the parts. The tube is lined, as before stated, by delicate ciliated membrane, the movements of which cilia, according to Henle, is toward the uterus, which is sufficient, with the peristaltic action or contraction of its walls, to convey the ovum into the womb.

The time occupied for the passage of the ovum through the Fallopian tubes, is not definitely known; but judging from observations made on animals, the period is supposed to be from six to twelve days. In the bitch and rabbit it is from six to ten days.

An ovum after being expelled from the ovary, is invested by a portion of the *membrana granulosa* which formerly lined the Graafian follicle, and in this condition is received into the Fallopian tube. These cells are closely attached to the *zona pellucida*, or outer membrane of the ovum. They give the egg the appearance of being surrounded by rays. This is characteristic of a fully developed and ripened ovum. After its passage into the tube, the great change it undergoes is the stripping off of the ray-

like appendage of cells. This is affected during its transit along the upper third of the tubes.

If impregnation does not now occur, the ovum or egg perishes. It cannot proceed any further in its development toward the production of an embryo. If the ovum should become impregnated several important changes take place, which are as follows: The zona pellucida, or outer membrane of the egg, having thrown off its outer cell-covering, and the spermatozoa have no difficulty in penetrating the soft albuminous membrane that encloses the yelk. When the spermatozoa penetrate the zona, the yelk contracts. This fact was first observed by Newport, who called the space the "respiratory chamber." This interspace is filled with a transparent fluid. After the contraction takes place another remarkable change occurs, which is the revolving of the yelk. This rotation is effected by the aid of cilia, which line the inner surface of the yelk. About this time a small body, or there may be several bodies, seen in the "respiratory" space between the yelk and zona which is supposed to have some connection to the cleverage of the yelk, which is about commencing.

OVUM STILL MORE ADVANCED IN THE TUBE.

THE OVUM FROM THE LOWER END OF FALLOPIAN TUBE.

The experiments of Newport settle beyond dispute, that segmentation or division of the yelk is the result of pregnancy alone, and never takes place without it. The segmentation commences first by a cleverage of the yelk into two equi-divisions, then into four equal parts, and so continues dividing in geometrical progression until the yelk is broken up in fine granular masses, with which the generative force of the male sperm is equally divided. How the yelk divisions take place before the ovum reaches the uterus is not certainly known. The fifth division, however, has been observed by Bischoff at the lower extremity of the Fallopian tubes.

The only additional change observed taking place in the tubes is a deposit of albumen around the zona pellucida, which takes place when the ovum is passing the middle and lower third of the tube. These occurrences are so uniform that the different offices for different portions of the Fallopian tubes may be readily determined.

THE DARLING OF THE HOUSEHOLD

HAPPY DAYS OF CHILDHOOD

MRS. ROOSEVELT AND QUENTIN, WHEN A BABY.

THE IDEAL AMERICAN MOTHER.

"WHAT WINNING GRACES, WHAT MAJESTIC MEIN,
SHE MOVES A GODDESS AND SHE LOOKS A QUEEN."

"THE CHARM OF HEALTH AND MATCHLESS GRACE
IN ALL THE FEATURES OF HER FACE."

"IN THOUGHT DIVINE THAT UPWARD GAZE
HER PURITY OF SOUL DISPLAYS."

HEALTHFUL PHYSICAL EXERCISE

TO BROADEN YOUR SHOULDERS TAKE A DEEP BREATH AND LIFT YOUR HANDS.

DEVELOPMENT OF THE ARMS AND CHEST

RAISE UPWARDS SLOWLY WITHOUT TOUCHING THE HANDS TO THE GROUND, BENDING BACKWARDS AS FAR AS POSSIBLE. INHALE WHILE RAISING. LOWER SLOWLY, EXHALING. THE EXERCISE IS MORE BENEFICIAL IF EACH MOVEMENT IS TAKEN IN THE GIVEN ORDER AND WITH TIME.

THE SPRINGTIME OF LOVE

THE YOUNG MOTHER AND HER TREASURE

ARRANGING THE MARRIAGE SETTLEMENT

FAINT HEART NEVER WON FAIR LADY

WHAT SHALL THE ANSWER BE?

NO LETTER FROM HER ABSENT LOVER

WAITING FOR HER ESCORT

THE SUNSHINE OF LIFE

The first or upper third is appropriated to the reception of the ovum, and for removing the adventitious covering of cells, while it also prepares the ovum for the operation of the spermatozoa. In the middle third, the respiratory chamber is formed, and here the rotation of the yelk commences. In the lower third the cleverage takes place, as also the deposit of albumen.

If these views of Bischoff be correct, it must be in the middle or lower third of the tube that impregnation occurs, or the ovum will perish. By the time the ovum reaches the lower third, in most animals, particularly the dog and guinea-pig, the "heat" is passed, and the animal will not permit coitus.

OFFICES OF THE FALLOPIAN TUBES.

To sum up the offices of the Fallopian tubes, they may be stated as follows:—

1st. To receive the spermatic fluid from the uterus, and convey it upward through the entire canal.

2d. To receive the unimpregnated ovum from the ovary, and convey it in a directly opposite course for the purpose of meeting the male sperm.

3d. To afford protection to the ovum during its brief pilgrimage through the tube, and to deposit on its outer surface additional material, increase its bulk and finally convey it into the cavity of the uterus.

The next question which arises in connection with this subject is—How far are these conclusions applicable to the human female in regard to gestation?

In the human female, that marked indication of sexual excitement known as "heat" in animals is rarely ever manifested, although it exists to some degree at each menstrual period. It is well known that the liability to impregnation is much greater immediately after the cessation of the menstrual flow than a little later during the intervals of the monthly turn. Observation would seem to strengthen the view which has been advanced, that impregnation occurs, as a rule, within twelve or fourteen days after the cessation of the menstrual discharge. It has also been known to occur after this period, but very seldom.

This may be explained by the casting of an ovum during an intermenstrual period which was nearly ripe at the cessation of the previous discharge; while it is quite possible, also, that an ovum may be retained in the tube longer than the period named, owing to some retarded action

of the regular functions of the co-relative parts. It may, however, be safely stated, as a general rule, that impregnation takes place within fourteen days after the cessation of the catamenial period. There are exceptional cases, as a matter of course, to every law.

The difference in the amount of formative material in the ovum of the bird is owing to the manner in which the embryo is supplied with its sustenance. Here the whole amount of nourishment required is provided in the egg before it is detached from the parent. In the human female and viviparous animals, the material for growth is derived from the maternal parent, whether afforded by the placenta or some analogous structure.

The egg of the ordinary domestic fowl may be regarded as the type of oviparous animals. A knowledge of its development will enable any one to comprehend the difference which exists between the eggs of the human female and viviparous animals, or those that develop with the egg the necessary material for growth independent of the parent. In such cases, normal temperament and a supply of oxygen are all that is necessary for development of the young, provided the egg has been fecundated before being thrown off by the female. A varnished egg will not hatch, nor can this take place if one-half of the shell be thus treated.

SIZE AND WEIGHT OF A FOWL'S EGG.

The average size of a fowl's egg is two and a quarter inches in long diameter and one and three-quarters in the short diameter, the average weight being two ounces. Double-yelked eggs usually weigh about three ounces. The weight of the yelk is usually about one-third of the whole, while that of the albumen and shell are equal to the other two-thirds. If eggs are kept exposed they become lighter, losing about one grain per day, which is owing to evaporation through the shell, it being of a porous nature.

During incubation or hatching of the eggs they lose rapidly, amounting in twenty-one days from sixteen to twenty per cent., or about one-sixth of the entire substance. Out of this amount of loss only five or six per cent. consists of water; the balance is the result of chemical decomposition, or most probably of combustion, by the union of oxygen with carbon, producing carbonic acid, which passes off through the shell. The shell of the egg consists principally of carbonate of lime, held together by animal matter, while the white is chiefly pure albumen. The yelk is

of oily matter, albumen, and about two per cent. of salts, with fifty-four per cent. of water.

The albumen with the sulphur and salts are immediately employed in the growth of the embryo, while the oily matter serves for combustion in keeping up the temperature during incubation. If an egg be examined immediately after being laid, there will be found directly under the shell at the larger end, a small space, called the air space, which increases the longer the egg is kept. This space also increases very rapidly during incubation, being caused by the evaporation of water and chemical decomposition, as before stated.

HOW THE EGG IS PERFECTED.

Structure of the Egg—Process of Formation.—Many fowls lay an egg every twenty-four hours during a portion of the season, while others lay every second day, or for two or three days in succession, at a later hour each day, and then intermit for one day. Other fowls lay regularly every thirty-six hours. As already intimated, the time occupied in the passage of the egg through the ovaduct in the dog, guinea-pig, rabbit and human female is from six to twelve days. In a fowl this transit is about twenty-four hours. If a fowl that has laid daily be killed six hours after the last egg is passed, the ovaduct will be found blocked up with a yelk that has been taken up by the fimbriated extremity of the tube, or it may be just grasping it. Sometimes the fimbriated extremity of the tube unfortunately fails to enclose the yelk when expelled from the ovary. In such cases it falls into the abdomen and may be removed by absorption, or it may produce peritoneal inflammation and death to the fowl.

During the passage through the upper or first two-thirds of the ovaduct, the albumen of the egg is deposited in a period of from three to four hours, according to Coste. It is proper here to remark that the yelk of the egg when it is expelled from the ovary is the same in structure as that of the rabbit and human female, before described; and that it is during the passage of the egg through the tube that the white and shell is formed, but it is not entirely perfected until after its lodgment in the uterus.

White of the Egg.—This constitutes several layers, and commences forming as soon as it enters the Fallopian tube. At first it is a thin layer immediately investing the yelk, which subsequently becomes condensed

into a membrane and the two narrow cord-like appendages, which were first albumen but afterward become twisted and form the membrane. As the yelk descends, the faster is the accumulation of the albumen round the yelk, giving to the egg its oval shape.

During the passage of the egg and formation of the albumen and shell, there is a great determination of blood to the several parts of the duct. The egg does not descend in a straight line, but in a spiral manner, which gives the spiral shape to the white of the egg and the twist to the chalazæ. The egg remains in the uterus from twelve to eighteen hours, in order to complete the formation of the shell. The lining membrane of the uterus is different from the membrane lining the ovaduct—the former containing follicular glands which secrete the substance for the shell.

As soon as the egg enters this part of the tube, a thick white fluid is poured out which is soon deposited and coagulated on a thin membrane covering the white. At first the shell is soft, but it soon acquires the hardness which is characteristic of the egg when laid.

In reptiles a similar arrangement is observed during the passage of the ova along the Fallopian tube. Instead of one, there are several in the tube at the same time, the same with rabbits.

NORMAL PROCESS OF MENSTRUATION.

CHAPTER IX.

ALL the functions of the generative organs of woman are not established without subjecting her to annoyances, nay, even to afflictions and sufferings, which need salutary counsel.

Woman is subject to the process of menstruation for the best period of her life. During this long term of thirty years of her womanhood, her health is dependent on the accomplishment of that function; according to the success or failure of that process she either flourishes in the enjoyment of health or languishes in pain and weakness.

A girl is seldom the subject of special anxiety until she enters the state of puberty; like a boy, she runs and plays, and nature undertakes no peculiar mode of growth suggestive of sexual individuality. Puberty, although apparently sudden, is effected gradually, and not always without accident. Its manifestation in menstruation may be so abnormal as to constitute a real malady.

A girl in a perfect state of health may be taken by such acute and severe symptoms as to lead one to suspect indications of a dangerous illness.

Parents, also, have been misled by the peculiar complaints into the belief that sickness was simulated, when, in reality, their daughter should have been rather an object of sympathy. Again, ignorant attendants, believing such an indisposition to be but an accidental attack of colic from indigestion or otherwise, have filled girls to drunkenness with alcoholic stimulants.

Menstrual colic having been mistaken also for a symptom of worms, or for some other imaginary ailment, medicaments, unfit for the girl's condition, have been administered, to the detriment of her general health.

It cannot be denied, however, that the symptoms are often obscure and confusing, because acute pain in the abdomen, accompanied by tightness and oppression, may suggest flatulency; irregular and heavy pain may suggest the presence of worms; yet, the age of the girl, the suddenness of the attack in the midst of good health, the periodical return of these indispositions, the regularity of the pulse, the natural condition of the skin, the cleanness of the tongue, the absence of indigestion or of diarrhœa, and the shortness of the pain should rather suggest a natural preparation for the menstrual flux. Moreover, menstrual colics are almost always attended by coldness of the feet.

These colics are generally relieved by hot foot-baths, application of heat over the region of the uterus; a bag of hot hops, or a hot corn-meal poultice. If there are complications, as tendency of blood to the head, neuralgias, pain in the chest, etc., some medical treatment may be required about which a physician should be consulted.

CAREFUL TREATMENT FOR GIRLS.

The establishment of menstruation is not unfrequently attended by serious constitutional difficulties, as chlorosis (green-sickness) and hysteria. Its manifestation may also be attended by such modifications of the general system as will result in an aggravation, or a decided amelioration, of the girl's usual condition. All of the special maladies incidental to menstruation will be treated hereafter, separately.

The appearance of the menses should be the signal for a girl to seek rest in a horizontal position, and for the avoidance of extreme cold and heat. Her beverages should be warm rather than iced. We have known a glass of ice water, taken while the body was heated by exercise, to suppress the menses instantly, and induce severe colic pains. The dress should be easy, loose around the chest and abdomen. Linen-wear should be discarded at such times, for it is too great a conductor of heat, allowing the body to cool too rapidly.

Delicate and nervous persons should adopt a system calculated to improve the general health; as exercise in the open air, riding on horseback, taking trips to the country. If inclined to melancholy they should seek distraction in innocent pleasures, and in the company of congenial friends.

During the period of menstruation, woman should be an object of solicitude, for even her moral nature may, during that time, be exposed to

changes which appear extraordinary to an observer. One author says that it is seldom that menstruation occurs without inducing some change in the usual demeanor of women. The majority of them are subject to weariness, vague desires, melancholy; they may be more irritable in their manners, more impressionable, easily frightened and discouraged; they are also more liable to take cold and more susceptible to the changes of the weather; in other words, they are the victims of many little infirmities, which ought to be recognized and treated with kindness, rather than ridicule.

Those who are naturally sensitive should be surrounded by soothing influences, and not exposed to anything that exalts the imagination. The diet should be light, and free from rich condiments and stimulating spices. The bath should be warm, and under no circumstances should the body be immersed in cold water immediately before the appearance of menstruation or during its continuance, even though it had been the habit to do so at other times. The feet should always be kept warm and dry.

GOOD NOURISHMENT REQUIRED.

Women of lymphatic temperament, of scanty menstruation, should be nourished generously with rare beef, roasted or broiled; rich soups, particularly of peas and beans. A little light wine, as claret or sherry, would be beneficial. Such women should also dress warmly, occupying well ventilated apartments, and make repeated excursions to the country.

Mothers should be particularly attentive to instruct their girls at the time when the generative functions are likely to commence; for it has often occurred that the unexpected appearance of blood on the garments has frightened girls into serious illnesses. It is also necessary that they should be made acquainted with all the causes that may produce suppression or derangement.

Ignorance has often led girls into errors which they would have avoided, had they known the serious consequences that would follow. Exposure to the inclemency of the weather, dampness, heat or cold; excessive exercise in walking, dancing, riding, playing or otherwise; exposing the heated body to a draught of cold air; plunging the feet into cold water; a sudden emotion, as fright, passion, joy; a violent pain; a drink of ice-water, particularly when the body is warm; a sudden check of perspiration—may induce immediate suppression and all its concomitant painful results.

In recapitulating the indispositions to which a young girl may be exposed during the period of menstruation, another author says: "If she is strong and robust, she may be tormented with vertigo, motes before her eyes, buzzing in her ears, flashes of heat in her face, nervous or conjestive headache, sleeplessness, and even convulsions. Her eyes may be conjested, and shed tears easily; her pulse bouncing and frequent; her temporal arteries throb; she may be subject to palpitation of the heart; to bleeding of the nose; to impeded respiration, and to sighing. She may be generally oppressed, or subject to pains and colic, and to fatigue from the least exercise.

"If she is feeble and lymphatic, she may be subject to conjestion of the head, although her face may be pale, her eyes languid, her pulse weak and slow;—also to palpitation of the heart, but not so violent as in the sanguine temperament. Her digestion may be feeble, yet she may desire indigestible substances, and sometimes articles entirely unfit for her condition. She may be subject to heaviness in the region of the stomach, to lassitude, to weakness even, and to the flow of leucorrhœa." So that the occurrence of symptoms like these, at the time of life spoken of, need not be looked on as alarming, but should, nevertheless, be carefully watched and attended to.

CAUSES OF ABNORMAL DERANGEMENT.

The causes of functional derangement may be divided into two classes:—*Remote* and *Immediate*. Under the first head let us consider several points.

Temperaments are often the predisposing cause of diseases of the menstrual organs. Women of lymphatic and nervous-lymphatic temperament are more prone to scanty menstruation, to leucorrhœa ("whites"), and hysteria, while the sanguine or nervous-sanguine temperaments are more liable to excessive and to painful menstruation. Where the nervous temperament predominates, the susceptibility to excitement and to external impressions predisposes the individual to conditions which disturb the natural exercise of the menstrual functions.

Diet and Nourishment. Insufficient, excessive, or improper food, disturbing the equilibrium of the vital forces, deranging the stomach, affecting the heart and the circulation, may induce such irritability of the nervous system as to predispose the organs of generation to functional derangements

Insufficiency of nourishment impoverishes the blood, lessens the vital force, weakens the action of the heart in the distribution of blood; and in the general insufficiency of the circulation of that all-important fluid the ovaries and the womb become the participants, manifesting their disorder in the scanty, pale, watery menstrual fluids, in leucorrhœa, and the relaxation of the muscles of the womb and its ligaments.

Excess of food, on the other hand, overtasks the functions of the stomach, distends its capacity as well as that of the intestines, and finally weakens digestion and the power of assimilation. Blood increases in quantity, distending the vessels and inducing general plethora. Excess of food then, and, particularly, if composed of highly seasoned dishes, overloads and irritates the system, until the womb and the ovaries, overcome by the plethora and irritability incidental to that condition, express their abnormal condition by painful menstruation, irritable uterus, etc.

HABITS OF WOMEN OF FASHION.

A young beauty, were she as fair as Hebe, and elegant as the Goddess of Love herself, would soon lose these charms by a course of immoderate eating, drinking, and late hours. Some of my readers may start at the idea, and wonder how it can be, that any lady could be guilty of either immoderate eating or drinking. But when I speak of inordinate eating, etc., I do not mean feasting like a glutton, or drinking to intoxication. My objection is not more against the quantity than the quality of the dishes which constitute the usual repast of women of fashion.

Their breakfast not only sets forth tea, coffee, and chocolate, but hot bread and butter. The last two, when taken constantly, are hostile to health and female delicacy. The heated grease which is their principal ingredient deranges the stomach. After this meal, a long and exhausting fast not unfrequently succeeds, from nine or ten in the morning until six or seven o'clock in the evening, when dinner is served up; and the half famished beauty sits down to sate a keen appetite with spiced soups, fish, roast, and boiled meats, game, tarts, sweetmeats, ices, fruits, etc. How must the constitution suffer under the digestion of this *melange!* How does the heated complexion bear witness to the combustion within!

"The superabundance of aliment which she takes in at this time," says a lady of the highest authority, "is not only destructive to beauty, but the period of such repletion is full of other dangers. Long fasting wastes the powers of digestion and weakens the spring of life. In this

enfeebled state, at the hour when nature intends you should prepare for general repose, you put your stomach and animal spirits to extraordinary exertion; your vital forces are overtasked and overloaded, and thus every complaint that distresses and destroys the human frame may be engendered.

"I am fully persuaded that long fasting, late dinners, and the repletion then taken into the stomach, with the tight pressure of stiffened stays on the most susceptible part of the frame then called into action, and the midnight, nay, morning hours of lingering pleasure, are positive causes of disease; and delicate proportions give place either to miserable leanness or shapeless fat; the once fair skin assumes a pallid rigidity, or a bloated redness which the vain possessor would still regard as the roses of health. To repair these ravages, comes the aid of padding to give shape where there is none, stays to compress into form the chaos of flesh and paints of all hues to rectify the disorder of the complexion. But useless are these attempts."

NERVOUS AND SEXUAL EXCITEMENT.

We cannot but indorse this logical lady; we grant her the privilege of speaking authoritatively; to her recital may be added more specifically that the unrestrained indulgence, so graphically set forth by her, excites the nervous and sexual system and engenders especially maladies of the menstrual organs, which are distressing and debilitating in the extreme. Every inordinate stimulation is inevitably followed by reaction, which is weakness and debility. Vitiated air is another source of the general debility of women, and of derangements of their menstrual functions.

Indolence and want of exerise stand foremost among the causes of uterine and ovarian derangements. Exercise is the harmonizer between the supply and the consumption, in other words, between nourishment and wear-and-tear. When properly conducted it gives vigor and strength to the body and assists all the organs in the performance of their functions. Deprive woman of sun, air, and exercise, and she becomes enervated; the functions of her generative organs languish; she loses her bright tints and colors, general debility follows, and in the general breaking down the menstrual organs assume maladies that add to the irritation and discomfort of the girl.

"If a young woman," a physician says, "would be well-shaped and well-conditioned, and would escape pains and the doctor, if she would

have grace and elasticity of movement, color in her cheeks, and admirable proportions in her limbs; if she would have a faultless foot and ankle, limbs of swelling proportion, the flesh firm, and the shape such as no sculptor could improve"—to which we add: if she would escape the thousand and one annoyances, pains and indispositions or of deranged menstruation, or of irritable womb and ovaries—"she must avail herself of sunshine and use due exercise on foot. Three, four, five, or six miles a day is not any too much for a woman in respectable health. Horseback riding is too lazy an exercise to do much good."

Mind and Imagination. The reflex action of the operations of the mind on the generative organs is so direct and immediate that over-exertion of the intellect and the prurient habits of the imagination rank pre-eminent among the predisposing causes of uterine and ovarian diseases. The ambition of parents to have a girl excel in mental development at an age when nature demands her freedom for physical growth, and the establishment of the functions special to her sex, has sacrificed many a lovely maiden to an untimely grave.

VICTIMS OF EXCESSIVE STUDY.

Girls at school, submissive to strict discipline, restricted in bodily exercise by reason (social) of their sex, rendered emulous by competition with boys in the higher studies of science or mathematics, become victims of overstrained mental powers, of over-excited nervous systems, and perish from the withdrawal of too much nervous force. Languor and exhaustion overcome them, the functions of the viscera and of the menstrual organs especially are impaired, and a life of strength and health is changed to one of pain and misery.

Among the many and illustrious correspondents of Dr. Clark, one says: "This baleful result becomes strikingly manifested as the girls approach the age of puberty. Under the abnormal conditions of the physical system produced by this cause, not only do the more emulous and studious girls suffer from the study which they evidently ought to intermit, but the ordinary and habitual task-work necessary to keep abreast of the studies is far too severe a draught on many constitutions."

Another says: "Girls suffer more than boys from attendance at school. Were, however, the habits of the two sexes the same in regard to out-door play and exercise, there would probably be no difference between the power of resistance in one and the other sex.

CHAPTER X.

PROFESSOR ELIAS LOOMIS, of Yale College, in his report, in which he speaks so highly of the mental qualities of woman, of her wonderful achievements even in the world of science, represents that her physical nature suffers under the great strain of emulation, and closes in this wise:

"As we look upon the increasing physical deterioration of our American girls, and reflect that they are to become the mothers of an unborn generation, on which will surely fall an inheritance of defective physical organization and consequent mental infirmities, it is time to sound a note of alarm, and look at the causes which are undermining the Republic, and search for the remedies that should be applied. We are a people given to experiment. There is nothing in our politics, economics, or religion that must not be put to the '*experimentum crucis*' (the rigid test). This is true of our schools for girls. The cry to our older colleges and time-honored universities is, Open your doors, that the fairer part of creation may enter and join in the mental tilt and tournament. God save the American people from such a misfortune!"

Dr. William A. Hammond says: "Puberty being a much more complex process in girls than in boys, the former are more liable to disease at this time; and this liability is increased by whatever tends still more to exhaust the nervous system, such as mental application and anxiety. I have repeatedly seen cases in which the flow of the menses had been suddenly stopped by the anxiety induced by the necessity of learning a school lesson."

While we could cite many authorities to prove the baneful effects of excessive mental labor in girls, we will only quote from Dr. Clark's work on "The Building of a Brain," a mother's letter upon the sad fate of her daughter. The plain and graphic story is simple and full of instruction, and warmed as it is by the pathetic throbs of a mother's heart, it conveys an irresistible truth that should be heard by every parent:

"At the age of fifteen Mary was a remarkably fine and healthy girl; she seemed to be safely over the critical period, and, until after that time, had never suffered as many girls do at the commencement of their womanhood. Her thinking powers were quick and vigorous; and she was the pride of her teachers and the joy of her parents. Unlimited mental progress was laid out before her, and it seemed that there were to be no bounds to her acquirements.

EFFECTS OF CLOSE APPLICATION.

"She had then finished a good common-school education, at the best high school, and had entered an institute for young ladies, of the highest character. The curriculum of study there was comprehensive, and it required the closest application of an ambitious scholar to succeed.

"One hour was allowed for walking and recreation during the day; and half of that could be spent, if the pupil desired to do so, in the music room. As the months went on, I began to notice that her complexion, which had been pure rose-leaf, became almost transparent, and that the fresh blood left her cheeks; still she did not complain, nor lose flesh, but said sometimes, that if she could sleep a week, she would enjoy it, and that it almost always happened when she was unwell she had the most to do, and the longest to stand.

"Her progress in her studies was wonderful; and it seems incredible to me now that we should have allowed her to devote herself to them so entirely. Her musical talents were great, and they were under cultivation also; when she was seventeen she was the first soprano singer in the choir of the church to which she belonged.

"At last I began to be alarmed at the remarkable flow whenever she was unwell, and at the frequent recurrence of the periodical function. I felt as if something should be done, and consulted our family physician as to what could be given her, and how this increased action could be stopped or diminished. He prescribed iron as a tonic, but said that we should do nothing more; for that 'every woman was a law unto herself,'

and as long as nothing more serious occurred, she was to be let alone. This from a man who had daughters himself, and eminent in the profession! Never a word about rest, never a caution that she could overwork herself, and thus bring misery for the remainder of her life.

"She left school, in June of that year, with noble honors and aching frame; and after two months' vacation and rest, which seemed to do her a world of good, began in September another year of unremitting, hard study. Loving and gratified parents, proud and expectant teachers, looked upon her as capable of accomplishing all that had ever been done by faithful students, and of advancing far beyond all who were in the graduating class with her. Her teachers were as kind as any could have been. I think the fault was in the system that requires so many hours of study, no matter what the condition of the pupil may be.

ADVICE AND COUNSEL OF A MOTHER.

"As an instance: twenty-five questions were given her to be answered. She was seated at a table, without books, from 10 A. M. till 3 P. M., ceaselessly thinking and writing; and the twenty-five questions in classical literature were faultlessly answered, and that, too, at a time when, had I known what I know now, she should have been resting on her bed. Her father, to whom the paper was shown for approval, wrote on the margin:

'It seems to me that the task imposed here was a great one indeed; but it has been performed with good success.'

"I do not for a moment mean to find fault with her teachers; for kinder, more interested ones no pupil ever had; and the delight that a teacher derives from a painstaking and appreciative pupil cannot be understood by those unused to teaching. While the dear child was meeting our utmost requirements as a scholar, the foundation of her life was being sapped away.

"A little more than two weeks before the June commencement, she was taken with fearful sickness and severe chills, just after one of the hemorrhages which came every three weeks regularly. [Menstrual, of course.] Our doctor was called; the first thing she said to him was, 'Doctor, I must not be sick now. I cannot afford the time. I must be well for commencement.' For four days she suffered very much, but quinine and all sorts of tonics brought her up; and the two weeks that should have been taken to get well in were spent in study, study, study. All the examinations were passed successfully, even brilliantly; and she was graduated with all the honors of the institution.

THE PRIDE OF THE FAMILY.

"Oh how proud we were of her! and when she came home, frail and weak as a wilted flower, we said that she should have a long rest, and every comfort that we could give her. All summer she remained in the highlands of the Hudson; yet, when autumn came, she was not as well as we thought she ought to be, though very much improved with regard to the monthly turns, they recurring at right times now.

"In September she commenced studying again; her French and music were continued, so that she might become still more accomplished in those branches; and lectures on rhetoric and moral philosophy were attended also.

"The habit of studying was so strong upon her that she could not give it up. Now came swelling of the joints and fingers, and the old trouble, all of which she would have kept to herself if she could have done so; but I was so anxious about her that I ascertained her condition, went to the doctor again, and begged him to tell me what to do that would stop the weakening periodical disturbance, as I was persuaded that was the cause of her trouble. He said she had inflammatory rheumatism, and prescribed soda.

"But I was not to do anything for the other matter, and, against my own convictions, I let things take their course. Oh, if he had said, 'Take her home, and stop her studying.' Armed with such authority, I would have done it; and how do we know but she might have been with us now, if I had done so? But she worked on until tha 25th of December. Then she came home, and said decidedly she would study no more till she was well.

"We were rejoiced at her decision; for although we were anxious that her education should be complete and thorough, we had felt for a long time that her health was becoming impaired. Still we were sure she had a good constitution, and that would carry her through. She did not grow thin, but stout and pale; and such a transparent palor that, now I think of it, I wonder all who looked at her did not see that her blood was turning to water. Her sweet and lovely soul was so uncomplaining, and her smile always so bright, that we never for a moment thought she could fade and die.

LAST STAGES OF DISEASE.

"She brightened up somewhat for the next month, but still did not get well. About the last of January her limbs swelled so much that, in haste, I rushed to the doctor. Then he said her kidneys were conjested, and that Bright's fatal disease was her malady. All that despairing love could do was done now. In five short weeks we laid her in Greenwood. Whatever was the form of disease from which she suffered, I am convinced that what she did have was brought on by excessive study, when she should have rested, and that it was fixed at the time when she got the severe chills.

"She was by no means a frail girl when she entered the institute. She was tall, finely formed, with a full, broad chest, and musical organs of great compass. Her bust was not flat, neither was it as full as might have been. Her features were not too large. She had brown eyes, brown hair, a very sweet and pleasing face. With every indication at first of strength and good constitution, she fell at last a victim to want of sense in parents, and teachers, and (shall I say?) physicians, too."

We make no apology for transferring here this letter in full. Besides sympathizing with this broken-hearted woman, which would be sufficient reason for us to send abroad every word of her lament, we feel that a more comprehensive, true, and significant illustration of the carelessness

in educating girls could not be given by the most experienced and observant hygienist.

Body and mind being parts of a grand whole, reflecting and depending upon each other, to neglect one is to injure the other simultaneously; exceptions form no valid argument against the requirements of this general law. Infringe it, and the penalty sooner or later must be paid. A proper equilibrium should be maintained by exercising the body and the mind, alternately with periods of rest and nourishment, necessary to the recovery of vitality lost in the exercise of mental or physical attributes.

HEALTH AND BEAUTY IN THE PATHLESS WOODS.

Exposure to wet, heat or cold. Getting wet at the times when the periods are about to appear, or are actually on, is probably more of an immediate than a remote cause of menstrual derangement.

Impedimenta. All kinds of mechanical pressure, as in the appliance of tight clothing, is another predisposing cause, affecting the circulation and the natural development of the muscular system.

Uncleanliness. "Cleanliness is next to godliness." What a remarkable adage! Why is cleanliness considered so excellent as to be

reckoned next to virtue? Is it because uncleanliness is repulsive to the human sense? That would be the negative reason. The proposition is, that cleanliness, mental, as well as physical, is purity—purity of the mind, purity of the body.

Impurities of the skin engender disease. The skin is an organ of absorption and secretion: it absorbs from the surrounding atmosphere elements of vitality; it secretes effete fluids of the body. It is the safety-valve during excesses of temperature; it contracts when exposed to a very cold atmosphere, preventing the blood of the capillaries from becoming suddenly chilled, and secretes fluid when exposed to a high temperature, inducing evaporation and cooling, thus preventing congestion.

Uncleanliness of this organ is a mechanical obstruction to its natural function, the bad effect of which reflects upon the whole system. It should be kept clean and protected from the excesses of temperature. When chilled suddenly it has caused dangerous congestions, checked or stopped the flow of the menses; and when it is kept for a long time in an unclean state, or exposed to sudden heat or cold, it becomes a source of chronic ailments of the chest and of the menstrual organs.

SOURCES OF HEALTH AND DISEASE.

Occupation is always a source of health, while its negative, *Idleness*, is generally a source of disease. Among the class in which the mental faculties are excited to premature activity, and the body is allowed to remain inactive, an unwonted irritability of the nervous system is the consequence. The harmonious, self-possessed cheerfulness of the woman of physical labor compares favorably with the faulty temper, fretfulness and weariness of the girl of indolence. The sleeplessness, headache, nausea, loss of appetite, abdominal pains, backache, and general good-for-nothingness of the latter, is seldom found in the former.

The life of the idler is emotional; the life of the worker is practical. The ailings of the nervous, indolent girl are soothed only by romantic literature, which excites the senses that reflect upon her organs of generation; the active girl overcomes the senses by a healthy exercise of the physical, and finds vigor in peaceful rest.

The occupations calculated to injure girls are such as demand an unwonted strain upon the abdominal muscles, *e. g.*, standing too long—as shop girls at a counter—long practice at the sewing-machine, or sitting too long bent over a desk. Girls at school, keeping a sitting posture for

six hours, wearing stays, which, on account of their stiffness, must press the abdomen inwardly whenever the body is bent forward upon itself, are liable to displacements of the womb from undue pressure. And even if the womb is not displaced the circulation of the abdomen is interfered with, which is then manifested in the costiveness of the intestines, and in painful menstruation from irritability of the ovaries.

When any of the foregoing Remote or predisposing causes exist, menstrual derangement is easily brought about, even by a slight exciting cause or immediate occasion.

Exposure to a sudden change from heat to cold, getting the feet or the body wet while dressed, allowing the wet clothes to evaporate and dry while on the person, will abstract so much heat from the body as to cause a shock to the system that may induce immediate suppression of the menses with all its evil consequences. And when this is repeated, inflammation of the ovaries and uterus will follow, capable of putting life in immediate peril, or of exposing to such derangements of the menstrual organs as will consign a girl to months and years of suffering.

EXCITEMENT OF THE PASSIONS.

Emotions. A sudden mental excitement from joy, sorrow, or fright often as suddenly checks the flow, producing a dangerous retention. "The menstrual organs are especially susceptible to the influence of excitement of the passions, and their disorders are oftener traceble to this source than to any other." The pleasures of society, inebriating to the young girl; her entrance to the theatre of love and passion, the fascination of erotic literature, dramas, or scenes, are often the beginning of a series of evils that sap her mind and destroy her body. Woman, by nature, more emotional than man, aggravating her condition by the effort to conceal what she fears may endanger her dignity, is rendered more susceptible to the evil consequences that result from the excitability of the senses.

The mother has evidently a serious duty to perform here. She should watch her daughter's associates; shield her from luxury and fashion; withdraw from her all literature of doubtful morality; restrain her from all things that fever the imagination, from intemperate wishes, from the enchantment of the senses. Unremitting vigilance, confidence and love should be her weapons. Purity of thought, tranquillity of heart and mind, will save her daughter from the gulf of errors to which she

unconsciously tends, and where she will find only misery for her soul and destruction for her body.

At a certain period of life, the purest heart and the mind most chaste are susceptible to the passion of love. With melancholic, dreamy, indolent natures, it is a fiery ordeal. Civilization has elevated the passion of the savage into a sentiment of affection in the refined. An ardent love, even in the latter, can take possession of the soul, agitate and dominate it. The younger and purer the heart, the stronger the affection which may be kindled into a passion by the enervating atmosphere of ball-rooms, theaters, toilets and perfumes that fascinate the senses.

VAIN AND HARMFUL IMAGININGS.

Socrates said: "The wind nourishes the fire; habit and opportunity inflame love." An inordinate love, engaging wholly the imagination, is fraught with danger to the celibate; it engenders disorders that affect the entire human economy; the excitation of the senses induces feverishness, restlessness, anxiety, sleeplessness, loss of appetite, melancholy; and nervous persons, tender and innocent girls, building a world of their own imagination, rising above the vulgar earth into a sentimental sphere, where daily avocations and animal necessities are too coarse to be observed, waste in flesh and droop in spirit, until maladies of a serious nature overtake them; hysteria, melancholy, chlorosis, neuralgias, etc. The organs of menstruation, in sympathy with the general abnormal condition of the system, suffer; and irritation, inflammation of the womb, leucorrhœa, may easily be the results.

Unrequited love, or strenuous opposition, is even more dangerous. It is an unequal fight; it is a struggle of the imagination against fate; it is a hopeless one. The young girl lives in the secret chamber of her fanciful architecture alone; she is sad and dreamy. The roses soon leave her cheeks, she becomes pale and hollow-eyed, morbidly sensitive; sighs come deep from her very heart, and tears flow easily; general weakness finally confines her to her couch; nothing can distract her mind now; nothing attracts her from solitude; she is alone among a thousand people; the roundness of her limbs deserts her; an irritating cough makes its appearance, fever (hectic) follows, and the grave in the dim distance opens its doors for her to enter.

Parents often fail in the manner of training girls whose attachments they disapprove. Fathers are too often harsh, and mothers whine over an

imaginary ingratitude of the girl; how could she love anyone but her father and mother who have reared her, been so indulgent to her? etc. It is wonderful how a full stomach forgets the keen sensation of hunger! Although the girl is already, by the very affection of which they complain, disabled from thinking and judging rightly of the fitness of things, or of considering coolly and philosophically while passion is burning, she is expected to act with reason and circumspection.

Father and mother might better look back and see in the mirror of their own life the very reflection of their daughter's condition. Sternness and bitter reproaches are out of place now, and certainly unavailing, as has been proved a thousand times. Travelling, change of scene, sympathy, love and good companionship, will do more towards calming the troubled spirit, and cooling the feverish excitement, than all the arguments or modes of coercion possible.

VALUE OF OCCUPATION.

The all-powerful guard against dangerous emotions, or reveries, is habitual occupation. Habitual is written understandingly, for transient occupation is not calculated to engage the mind; but, when habitual, it becomes a necessity, on account of which it is performed, even though the mind is preoccupied by thoughts foreign to the act. It is this habitual occupation that so often enables man to withstand emotions that disappointments and misfortunes induce; the dignity of labor, the interest in his profession or trade, the healthful effort to succeed, and pride in conquering adversity, make him powerful in the struggle for existence.

If a woman is so devoted to the duties of her vocation as to render her life a necessity to others, or, to such pursuits as engage her intellect in the accomplishment of something worthy of herself and of the respect of her fellow-creatures, in either case, allegiance to her higher nature is evinced by self-forgetfulness and loving care for others in the one, and manifestations of a healthy active brain in the other, and she is not the victim of passion or sentimentality.

Let every girl have an habitual occupation with which she is identified for success or failure, and the problem of life will become to her a fact of practical value, instead of a sentimental illusion. Let her be one of the helping hands of the household; let her be identified with all the interests and struggles of her parents; let her employment be steady and progressive, and she will not seek rest or solace from her "ennui" in the

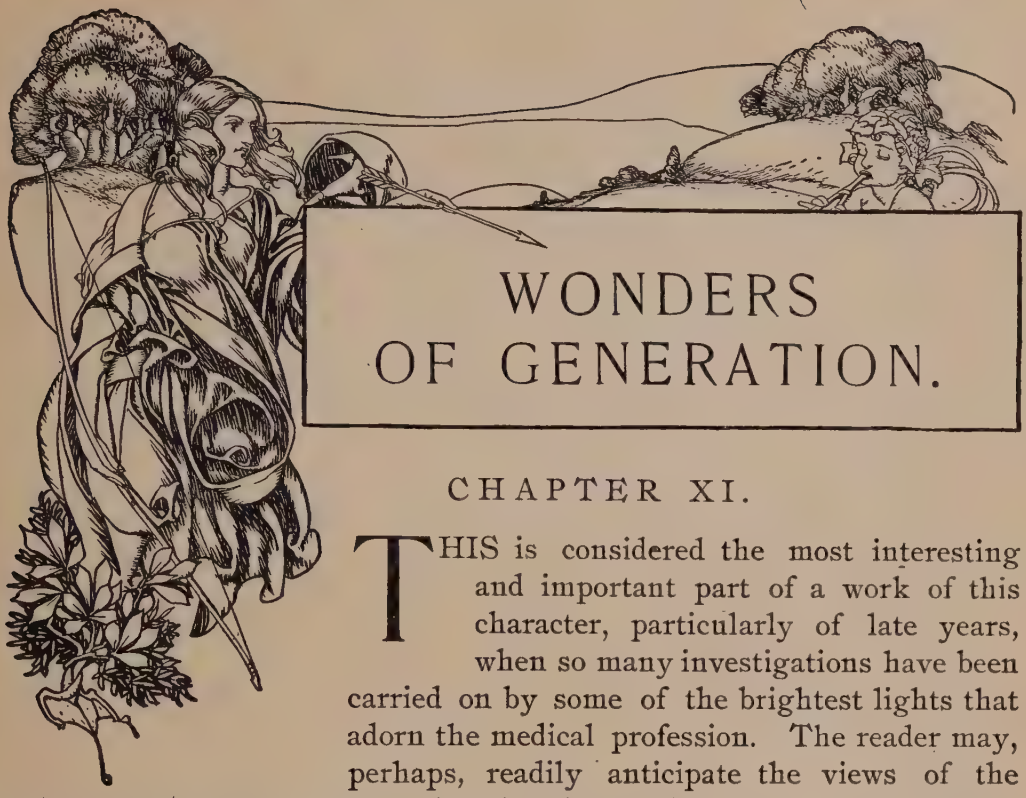
romances of the day, in the admiration of silly youths, nor in the vanity of ever-changing fashion. Conscious of her usefulness, she will respect herself, which is to have the strongest bulwark against the insidious attacks of imaginary evils, or excessive and unhappy emotions.

An injury, a fall, a shot, a railroad accident not in any way fatal, will cause a shock to the nervous system that may induce a sudden suppression of the menses. Acute diseases, as fever, hemorrhoidal hemorrhage, inflammation of the bowels, dysentery, pneumonia, pleurisy, etc., often induce a suppression, not only during the acuteness of the disease, but even until the general system has totally recovered from the debilitating influence. Change of climate, particularly from a high to a low temperature, and brought about in a quick manner; travelling—crossing high mountains, and even crossing the sea—has induced suppression of menstruation. There is no doubt that the cause is found in the quick succession of change in the temperature or other conditions of the atmosphere.

It has also happened that women who lived in level districts and menstruated regularly were subject to suppression of menses while residing on high mountains or at sea; and that the return did not occur even for several months after change of locality. Novelty of situation, change of exercise, as going to live in a house having many steps to ascend and descend, or even so slight a thing as changing from carpeted steps to marble ones, has sometimes caused temporary suspensions.

The natural suspension of menstruation, the critical period that occurs at a certain time of life (at about the age of forty-five) is the cessation of reproduction, commonly called "change of life." It is a natural process, and should be unattended by discomfort or illness; but, alas! the hygienic rules so long disobeyed bring their result even at this stage, consequently, the process of cessation is hardly ever undergone without entailing upon woman disease and suffering.

Another natural suppression is pregnancy, which the reader will find treated in its proper place.



WONDERS OF GENERATION.

CHAPTER XI.

THIS is considered the most interesting and important part of a work of this character, particularly of late years, when so many investigations have been carried on by some of the brightest lights that adorn the medical profession. The reader may, perhaps, readily anticipate the views of the authors of this volume from what has been advanced in the preceding pages. The work, however, would be imperfect without a fair presentation and comparison of the facts and opinions of former writers with the latest observations made upon this subject. Hence they will be succinctly stated and analyzed according to their relative importance.

The process of generation is that by which the young of living organized bodies are produced and the species continued. Some animals propagate by a division of their bodies into pieces, each one becoming endowed with an independent existence similar to the parent. Others propagate by buds upon the parent stem, which buds, when they arrive at maturity, separate and retain an individual existence. Another class of animals throw off from their bodies a portion of organized matter which, after undergoing various processes of development, acquires all the peculiarities of the parent.

In the fourth and last class, the process is more complex than in either of the others. In this last division, the union of the male aud female sexes is necessary for procreation. The reproductive functions require more complicated processes in the higher than in the lower order

of animals, in order to the perpetuation of the different species through an undeviating succession of generations.

While speaking of the process of generation in man, it will be appropriate to present some interesting facts respecting reproduction in some of the series of the animal kingdom inferior to the *genus homo*, or man. The reader will understand that the egg furnished by the female is perfectly *barren* so far as regards progressive development, unless it receives some influence from the product of the male generative organs. This is equally the fact in regard to the product of the male. To render either fruitful, there must be a union of the two several products of the male and female.

The scientific man, as well as the more ignorant, in all ages, have contempated with wonder and admiration the phenomena by which the young of animals are brought into existence. The gradual construction of the frame-work of the animal body—the changes necessary for the formation of the brains and nerves, by which man thinks and feels—the muscles that induce locomotion—the process of nutrition, by which the various organs are formed and nourished—all proceeding from the comparatively simple structure of the egg—are well calculated to inspire wonder and admiration of the works of Nature, and lead man to indulge in many absurd and unwarranted hypotheses and speculations, as to the origin and perpetuation of the various animal species.

VITAL POWER DERIVED FROM THE PARENT.

The ascertained fact that the egg possesses an inherent vital power in itself, derived from the parent, and the mode of its being called into action by external physical agents—such as heat, moisture, oxygen and light—the influence exerted on it by being brought into contact with the male sperm—the preservation of the distinct species from generation to generation in undeviating succession—the transmission of hereditary weakness and constitutional peculiarities of form, resemblance and mental traits—all have a tendency to throw an air of mystery over the functions of reproduction.

There is one fact that must be borne in mind, which is, that all the scientific and learned can do, is to investigate matter and observe the laws which control and change its elements. The same elements that now exist, and the same forces, have existed from all eternity. It is the operations of these forces upon these elements, in the formation of new

compounds, that we are to study, and this is all that man can do in this life. This investigation constitutes science, and beyond the light of such knowledge no man can safely venture.

Hence it is apparent, all that is necessary for the generation of a new being is matter endowed with a vital force. This force calls to its assistance other physical agents in unfolding organic forms. Such agents are heat, light, moisture, and oxygen. It was from the action of the vital force upon matter, with the assistance of the agents named that the first plant or first animal was formed.

An egg healthily developed, when brought in contact with the male principle, has this vital power awakened in it, and if it can then draw to itself the aid of the several agents already named, will gradually develop a human being, endowed with all the peculiarities of its parent, simply because the unfolding or vital principle in the egg and male sperm, is a part and parcel of the parental stamina.

THE VITAL PRINCIPLE IN BIRTH.

It is an established law of Nature, that "Like begets like." Should there be any interference with such unfolding or vital force there will be an imperfect development, denominated malformation. This vital principle is the constitution of the new being, and has imbedded in it, or united with it, all the peculiarities or idiosyncracies, and all the hereditary weaknesses and ailments of its parents. Females should remember this immutable law, before selecting a partner for life, if they would not entail upon posterity constitutional defects that can never be remedied.

It is somewhat amusing to contemplate the various theories that have been advanced in regard to generation, in various ages of the world.

Drelincourt, a distinguished author of the last century, names no less than two hundred and sixty-two groundless hypotheses of generation, from the writings of his predecessors. Blumenbach justly remarks that nothing is more certain than that Drelincourt's theory formed the two hundred and sixty-third.

As it would be an endless and fruitless task to wade through all such theories, a few of the more plausible and remarkable ones may be briefly presented in the present place.

One of the oldest theories was that of the Ovists. These philosophers maintained that the female afforded all the material necessary for the development of the offspring—the male doing nothing more than awak-

ening this dormant principle in the female. This was the celebrated Pythagorean theory. It was also Aristotle's, somewhat modified. Some of the old authors who entertained this theory, supposed that the embryo was formed from the menstrual fluid which descended from the brain during sexual union.

Another theory which had many advocates was that of the Spermatists. They supposed that it was the male semen alone which furnished all the vitality that was essential for the new being—the female or gans simply furnishing a fit place or matrix, together with the materials necessary for its nourishment and unfoldment. This was Galen's favorite theory.

THE SPERMATOZOA.

After the discovery of spermatozoa in the male semen, those that had supported Galen's hypothesis, now maintained that the spermatozoa were minature representations of men, and called them *homunculi*—some even going so far as to assert that they discovered in them the body, limbs, form of face and expression of countenance of a full-grown human being. They also entertained the idea that these were male and female homunculi —that if a female homunculum was deposited a human female was developed, and the same of the male.

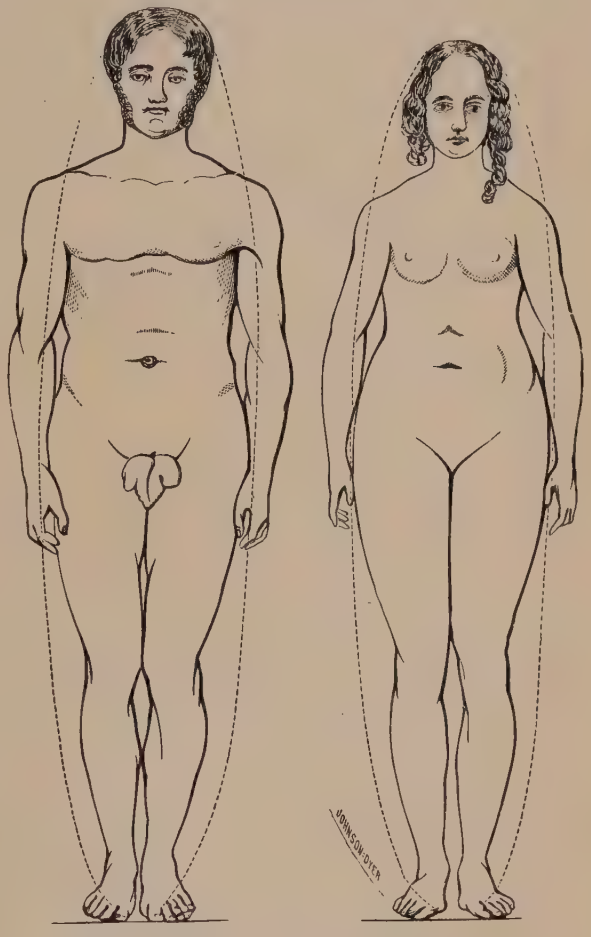
Reproductive Function in Man. The period of life at which the human being is capable of reproduction is termed puberty. At this period important changes are observed in the structure and functions of the system. These changes are more marked in the female than in the male, which may be attributed to the female affording nourishment for the children during the whole of intra-uterine life, while the male furnishes only the material for fecundation.

In infancy and youth the two sexes do not differ materially in their general physical conformations nor in their mental characteristics. At the period of puberty, however, there is observed a marked antagonism both of the intellectual and anitomical developments. The broad chest and wide shoulders of the male, and the large pelvis and abdomen of the female constitute the chief peculilarities of difference between the male and female sexes.

The body of the female is smaller, in weight about one-fourth less than that of the male. Her frame is more tapering, the muscles less prominent, the limbs are round and symmetrically proportioned, the bones

small, the skin delicate and fine, the voice soft and feminine, while there is that chaste and reserved modesty of demeaner, which is so irresistibly captivating to the other sex. In the male there is the low, rough voice, owing to the large size of the larynx and vocal cords; hair appears on the skin and all over the body and limbs, indicating great physical powers and activity, enabling him to endure much fatigue and excel in deeds of strength and daring.

In the male, at puberty, there is also an enlargement of all the generative organs, which is accompanied with sexual feelings and the secretion of semen by the testicles, prostrate glands and vesicula seminalis, with occasionally a spontaneous emission occurring at night, generally during dreaming.



MALE AND FEMALE FORMS CONTRASTED.

In the female there is likewise an enlargement of the breast and genital organs, while there is a peculiar discharge from the latter, termed the "menstrual flow." It is not out of place here to mention that there is no discharge from females during sexual congress, as many suppose, equivalent to that emitted from the male during such conjunction of the sexes. There is, however, a secretion from the glands of the vagina which serves to lubricate the parts during coition and increases sexual pleasure. The excitement attendant upon coition is paroxysmal in both male and female, the seminal discharge taking place only from the former at the height of such paroxysm.

The period during which the genital functions are exercised is vari-

able in both sexes. In the female the period is usually about thirty years—from puberty at fifteen years to the "change of life" at forty-five years. In the males it is somewhat longer—generally from forty-five to fifty years, or from the fifteenth year of age to the sixtieth or seventieth year. There are many instances where the virile powers of the male have been retained even to a much more lengthened period—to the eightieth, ninetieth or one hundredth year. In the celebrated case of "Old Parr," it continued unimpaired until he reached the age of one hundred and thirty years of age; Masinissa, king of Numidia, after he was eighty-six years years old, begat Methynate; Wadalas, king of Poland, had two children after his ninetieth year. The Hon. Jeremiah Smith, of New Hampshire, became the father of a child when he was eighty.

INFLUENCE OF THE VARIOUS TEMPERAMENTS.

The author is acquainted with a gentleman who married for the first time when he was seventy-five and had two sons by a young wife. There are some cases on record of females menstruating the second time and bearing children at seventy or eighty years of age. I am cognizant of the case of a lady of Philadelphia who commenced menstruating at nearly eighty years of age, and conceived.

In all animals where the distinction of sex exists, there are instinctive feelings experienced to a greater or less extent. This feeling depends upon the temperament of the body and the condition of the mind. In animals the impulse is concomitant more upon a peculiar state of the genital organs, which is manifested at a particular season of the year, known as the "breeding" or "rutting" period. In the female at this time a peculiar secretion takes place in the genital organs, the odor of which excites the sexual functions of the male.

In the human species a similar function exists, but which is capable of being placed under intellectual and moral control. When not so governed, this passion is productive of the most revolting obscenity and prostitution. Hence the necessity of legislative enactments to restrain licentiousness and concubinage.

The sexual passion is modified very much in some temperaments. For instance, the sanguine, being more voluptuous, love amorous preludes. The bilious are under an erotic fury, which is as great as it is quickly exhausted. The melancholic burn with a secret and more constant flame, while the phlegmatic are cold and insensible.

The temperaments should be more understood than they are by those selecting a partner for life. That happiness which is so desirable in wedlock is seldom found where the temperaments, sentiments and sexual feelings of the husband and wife are of opposite or antagonistic character. Among the lower classes this incompatibility of impulses, or "unequal yoking," as St. Paul expresses it, often leads to adultery, separation and other domestic discomforts and miseries.

The brain appears to exert considerable influence over the sexual organs. The sexual feelings are more or less under the control of the mental faculties, in the same manner that the action of the heart, digestive process, respiration, secretion, and in fact all the functions of the body, are subject to the operations of the intellectual apparatus. It is also a fact that the genital organs excite mental desires.

PROMINENCE OF THE LOWER BRAIN.

Phrenologists maintain that the cerebellum (or lower brain, back of the head) presides over the sexual feelings, or rather that such impulses belong to that organ, and that it is from thence all sexual desires emanate. It is found that those who have the back of the head and neck large, have the sexual passions more strongly developed than is the case in those persons where such prominence does not exist.

The same fact has been observed in animals; while it has been proven by observation that diseases of the cerebellum, such as inflammation and injuries from gunshot and other wounds, impair or destroy sexual desires. Also it is known that if the cerebellum be stimulated in any manner, the sexual desires are increased in accordance with such stimulation.

Carpenter mentions several instances of this kind. One of these cases was that of a man whose sexual proclivities had always been strongly manifested through life, although they were entirely under the control of the will, until about three months previous to his death, when such erotic impulses increased in a most extraordinary degree. A post-mortem examination after death revealed a tumor on the back of the head. The other case was that of a young officer, who, on the eve of marriage, received a blow on the occiput by falling from a horse. He became impotent, without any other derangement of his bodily or mental powers. In distress upon this discovery of his imperfection he committed suicide on the morning fixed for his wedding.

There are many other instances on record of this character, going to substantiate the phrenological theory that the cerebellum (or lower brain) is the seat of the amorous or voluptuous passions.

FECUNDATION.—It has been already stated, that impregnation is accomplished by the union of the male spermatozoa and the ovum of the female, during the passage of the latter through these tubes toward the uterus while the change which takes place in the ovum after the union occurs, has also been explained. If the spermatozoa do not come in contact with the ova, these changes do not take place, but the eggs pass out into the uterus and are lost. It has also been stated that menstruation is a process preparatory to impregnation. In other words, that during the menstrual phenomenon an ovum is ripened and expelled from the ovary; that it is then taken up by the fimbriated extremities of the tube, drawn into its channel and forced (by a series of contractions or certain peristaltic action, with the assistance of the ciliary lining of the tube,) toward the uterus, which is the receptacle for the further development of the egg or embryo.

OFFICE OF THE UTERUS.

As has been remarked, the office of the uterus is to receive the seminal fluid and conduct it into the Fallopian tubes. The neck of the uterus does not, as many suppose, receive the male semen, when it is first ejected from the male intromittent instrument; but it is thrown into a pouch-like receptacle at the upper portion of the vagina, surrounding the mouth of the womb and formed by dilation of that organ. The uterus is suspended in the axis of the pelvis, and in such a position to the vagina that the mouth of the womb is maintained in the very centre of this pouch, and thus affording a facility for the semen to pass into the neck of the uterus.

Blundell describes a peculiar movement which he observed in the vagina of the rabbit, that very clearly explains the manner of the introduction of the semen into the uterus. "This canal" (the vagina, says he) "during the heat is never at rest. It shortens—it lengthens—it changes continually in its circular dimensions, and when irritated especially will sometimes contract to one-third of its quiescent diameter. In addition to this action the vagina performs another," which "consists in the falling down, as it were, of that part of the vagina which lies in the vicinity of the womb; so that it every now and then lays itself as flatly over its orifice, as we should apply the hand over the mouth in an endeavor

to stop it. How well adapted the whole of this curious movement is for the introduction of the semen at the opening, it is needless to explain."

The cervical canal is traversed by a large number of furrows, which assist in conducting the semen into the body of the uterus. It is not likely that the ejaculatory act of the male is sufficient to throw the semen beyond the pouch and against the *os* or head of the womb, inasmuch as the close approximation of the walls of the cervix would prevent it passing further. It is not certainly known in what way the spermatozoa are assisted in their passage through the womb into the Fallopian tubes. It is, however, supposed that the ciliæ which line the cervix or neck of the womb, in conjunction with the approximation of the walls of the uterus, afford the requisite facility for such purpose. The close approximation of the walls of the uterus would naturally facilitate the rise of the semen, the same as water placed between two pieces of glass will rise so as to cover the internal surface of both.

PRINCIPAL POWER OF PROPULSION.

The movement of the spermatozoa is most likely the principal power that is used for their propulsion upward. Indeed, it would appear that it is only by such movements that they can penetrate and pass up the Fallopian tubes toward the ovaries, inasmuch as the cilia that line the cavity of these tubes would rather retard than promote their ascension, for the simple reason that their (the cilia's) wave-like motion is in the reverse direction, or toward the womb from the fimbriated extremities of the tubes. There is further proof that the movement of the spermatozoa is the principal agent in their ascension, in the fact of their possessing sufficient power to pass into the egg or ovum on coming in contact with it.

The office or function of the testicles is to secrete the male sperm, a substance that appears to the naked eye like ordinary mucus devoid of life. If the microscope, however, be applied to a small quantity of this secretion, taken from a healthy male who has arrived at puberty, it will be found alive with minute, thread-like, bodies. So numerous are these that, at first sight, the semi-liquid mass seems to be almost entirely made up of them. The are called the seminal animalcules, or spermatozoa. There are also found in this *liquor seminis*, minute round corpuscles called seminal cells.

Spermatozoa, in man, as well as in animals, and some of the higher order of plants, have their origin in cells, which are denominated seminal

cells or *spermatophori*. These cells are filled with granular matter, each granule capable of being developed into a spermatozoon. These germ cells are developed in the tube composing the testicles. It is within the tubes these cells burst, when the thread-like bodies escape, and take on those peculiar motions which have given rise to the opinion that they are distinct animalcules. Some physiologists do not regard them as possessing distinct animal characteristics any more than is attached to the cilia that line the cells of the neck of the uterus and Fallopian tubes. Hence they have been called cell-germs, furnished with peculiar moving power. The form of development in animals is somewhat different, and the motion will correspond with the development. Those with tail-like appendages resemble the motion of an eel in water. Those with the spiral development have the spiral motion. From observation it has been ascertained that spermatozoa will retain their moving powers twenty-four or thirty hours after they enter the uterus and Fallopian tubes.

COMPARISON OF THE VIGOROUS WITH THE WEAK.

In the young and vigorous, the spermatozoa are abundant and active. In debilitated persons, those that have weak constitutions and where the vital forces are depressed, the spermatozoa will not only be found very scanty but exceedingly feeble. Such scantiness and feebleness will correspond with the vital energy or debility of the individual in whom they are developed. In consumptives, and those who have broken down their constitution by over sexual indulgence and onanism, the action of the spermatoza is slow and their development imperfect. In aged persons they disappear, while the testicles, like the ovaries of aged females, cease to perform the functions allotted to them in the prime and vigor of life.

The natural secretion of the vagina and uterus of the female is favorable for the maintenance of spermatozoa. When these become changed to acid secretions, they act as poisons and quickly destroy the spermatozos. Hence, one of the causes of sterility in the female is owing to the change in the secretions of the os cervix uteri and vagina.

The spermatozoa in man are exceedingly small—being about $\frac{1}{50}$ of an inch in length, and $\frac{1}{500}$ of an inch in diameter. The seminal animalculæ are said to be no larger in the whale than in the mouse. They are much larger in insects, mollusca, and others of the lower animals than in man. They are considerably larger in the mouse than in the horse, and in the snail fifty-four times larger than in the dog.

The office of the spermatozoa, as before stated, is to impart new life to the female ovum. This takes place in the Fallopian tubes during the passage of the ovum toward the uterus. The quantity of semen eliminated at one coitus is from one to three drachms, of which, perhaps, only about one-hundredth part consists of spermatozoa.

It is generally conceded that but two or three drops of semen proper, or spermatozoa, are ejected from the testicles at one conjunction of the sexes. The balance is an albuminous fluid secreted by the vesicula seminalis and prostate gland, which secretions are thrown off at the same time as that from the testicles. The use of this superabundant fluid is for the purpose of protecting these thread-like animalculæ and assist their movements. It possesses the right density or specific gravity for this purpose. If the density be increased the movements of the spermatozoa will be impeded; if reduced, they are destroyed upon the principle of endosmose.

EXAMINATION UNDER THE MICROSCOPE.

I have in several instances placed a drop of semen under the microscope, which was very thick, and always found that the motion of the spermatozoa was exceedingly slow. They presented the appearance of a tangled mass of thread-like objects unable to extricate themselves. The moment, however, a drop of blood was applied, they found no difficulty in disentangling themselves. They would turn around once or twice and lash their tails, which seemed to unite the two liquids, and put the whole mass of animalculæ in motion.

The cause of motion of spermatozoa is not certainly known, but it is supposed to be similar to the wave-like motion in the ciliated cells of the uterus and Fallopian tubes. In cold-blooded animals, the fishes for instance, they retain their power of motion longer than in warm-blooded animals. In the former they continue to move for days after being expelled from the male. Their movements continue for a longer period in the interior of the female organs of generation. In some species of insects the spermatozoa will continue their movements for months when brought in contact with the female organs of generation.

In the human female it is supposed that the spermatozoa will retain their moving power for thirty-six hours after coitus. Common water at low temperature rapidly arrests their movements, while dilute saline solutions, or sugar and water, on the other hand, appear to have very little influence upon their actions. Such is also the fact with common

saliva, or bile, or pus. Urine has rather an injurious influence upon their movements, especially when it has an acid reaction. The chemical agents are the only ones that have positive injurious effects upon the movements of spermatozoa. They not only stop their operations but dissolve their structure and change their composition. For instance, alcohol, acids, metallic salts, narcotics, strychnine have similar effects to common cold water.

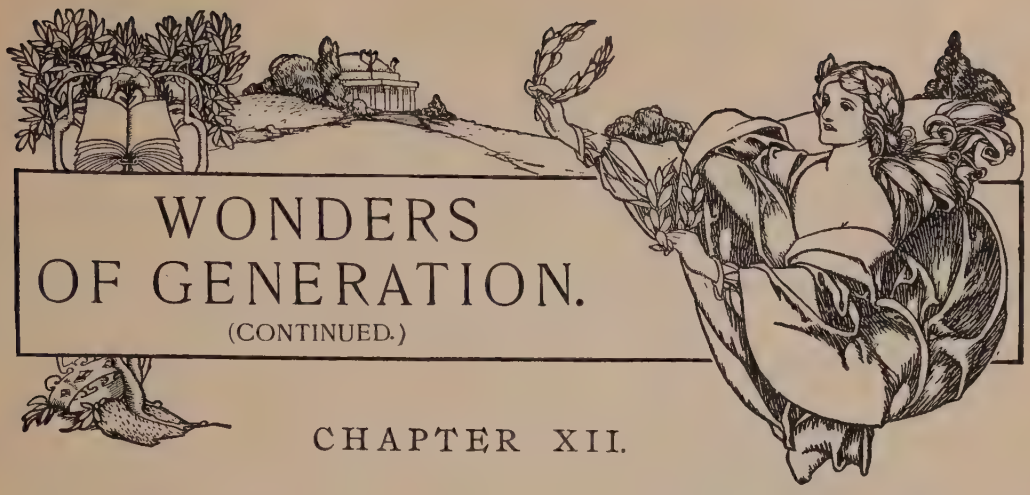
Heat and cold seem to affect their movements, although the action of the spermatozoa of frogs and fishes continue after the media in which they are surrounded sink below zero. The electric spark destroys the motion of spermatozoa instantly, by changing their structure, while Galvanism has no perceptible influence upon them, which fact is somewhat remarkable. I have made a number of experiments with chemical re-agents, under the microscope, and always found that mineral and vegetable acids dissolve spermatozoa instantaneously as electricity. The same is the fact with mineral and vegetable astringents.

ABSURD THEORIES OF FORMER TIMES.

On the first discovery of the seminal animalculæ, there were many hypotheses advanced concerning them. By some they were considered the cause of sexual enjoyments or venereal propensities. Others supposed that the spermatozoa were of different sexes, and believed that if a female spermatozoon happened first to penetrate the ovum a female offspring was the result, and the reverse, when a male spermatozoon succeeded in fecundating the egg. Another class imagined that a spermatozoon possessed all the organs of a human being in a compressed state, which became developed or unfolded by the female generative organs—in other words, that a spermatozoon was a miniature human being.

Such absurd theories require no refutation. They were advanced in a hypothetical age of the world.

Having thus shown the process by which the semen is received into the vagina, and given some idea of the manner of the passage of the spermatozoa into the Fallopian tubes, it will now be proper to investigate a very important part of the subject of Generation.



WONDERS OF GENERATION.

(CONTINUED.)

CHAPTER XII.

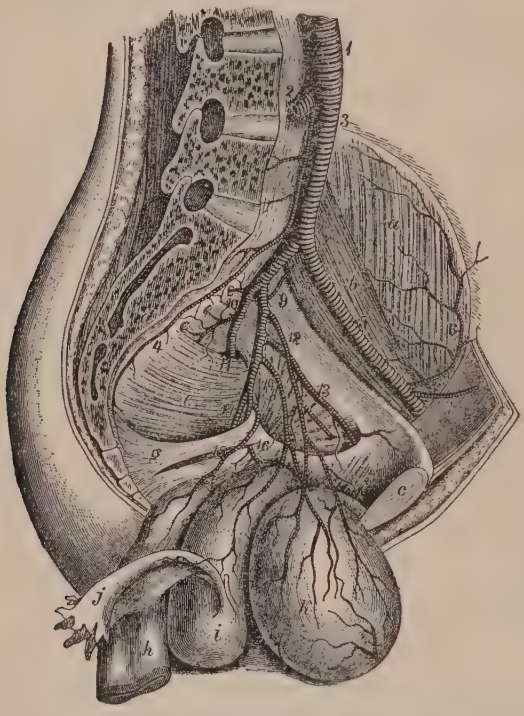
UNFORTUNATELY, the precise period at which impregnation takes place in the human female cannot be definitely determined. From observations, however, that have been made in a large number of cases, it would seem certain that it must occur during the first half of the menstrual period, most probably during the first half of the menstrual period, most probably during the first week after the cessation of the discharge. In sixteen cases observed by Raciboski, conception only occurred as late as the tenth day. Notwithstanding the occurrence of impregnation is perhaps ninety-nine per cent. of cases within ten or twelve days after the cessation of the catamenial flux, the other case may occur at any time subsequent to the last and prior to the next menstrual period.

There is no evidence to support the theory that impregnation may occur at any time during each month, by the rupture of an ovasac as a consequence of sexual excitement. Nor is it likely that the ovum is retained in the Fallopian tubes from one menstrual period to another. Indeed, the contrary is proven by examination made on animals. It has been already stated in this work, that the ovum is usually from six to eight days in passing through the Fallopian tubes of the bitch. In the Guinea pig the time is from two to three days. In the rabbit it does not extend beyond the fourth day.

Therefore, if the theory just mentioned cannot be maintained, the second hypothesis would seem inevitable, viz.: that an ovum, after it is ejected from the ovary, is from six to fourteen days in passing the tubes, and that impregnation must take place during that time. M. Pouchet is quite positive that the period is not beyond fourteen days. If the views of this distinguished physiologist be correct, it follows, as a matter of

course, that there is a period after the cessation of the menstrual discharge during which woman is incapable of conception, which idea Pouchet himself adopts as logically philosophical.

No doubt such is the fact as a general rule, but it may be necessary to account for the occasional mishap, or exceptional case, out of the two hundred that have been named. This is explained by M. Coste, who holds the same views with M. Pouchet in regard to the time in which cessation takes place after the cessation of the menstrual flow.



VIEW OF THE LEFT SIDE OF THE PELVIS, THE BLADDER, UTERUS, VAGINA, AND RECTUM.

Coste supposes that when a chance impregnation takes place after the fourteen days, that it is owing to the Graafian vesicle having failed to expel the ripened ovum, or the one that came to maturity at the last menstrual period, while sexual commerce occurring after this period is sufficient (on account of the excitemen attending it) to rupture the follicle and liberate the imprisoned ovum, and thus insure impregnation.

To prove this he has presented a number of experiments which he had made upon animals. One of these cases is that of a rabbit which during heat manifested great desire for the male, but was not permitted conjunction. Forty-eight hours afterward it was killed, when the genital organs were found very much congested with blood. Six follicles in one ovary and two in the other were ready to burst, but no rupture had yet taken place.

Another experiment also was upon a rabbit, which remained in heat three days, manifesting great ardor. On the fifth day it was killed, when the ovaries were found greatly congested, but without rupture of the follicles. Coste attributes the absence of rupture to the prevention of coitus.

These experiments seem to favor the old theory of conception, viz.:

that the ova are detached conjointly with fecundation, and that conception may take place at any time during the interval of menstruation.

Other experiments, however, which have been more recently made, and which have already been presented in this work, set aside this theory as incorrect. It is well known that the ova are ripening during menstruation, and that when this ceases they are no longer eliminated or thrown out of the ovaries. An occasional retention should not overturn a theory that has the whole chain of proof upon its side, with the exception of one link, which deficiency is satisfactorily explained by M. Coste.

ESTABLISHED FACTS.

In summary of established facts, then, a recapitulation of the most plausible and rational theory now entertained, may be presented as follows:

It is during the menstrual period that the ova are ripened. They are then received into the Fallopian tubes, and occupy from six to fourteen days in their passage to the uterus. If impregnation occur, it must be from the union of the spermatozoon with the ovum, before the latter has passed out of the tube. Should there be no impregnation, the ovum passes into the uterus and is lost. If five days be allowed for menstruation and fourteen days more for the passage of the ova (though twelve are accounted sufficient), there is accordingly a period of nine days during which impregnation cannot take place, except in rare cases, say once in one hundred times, or indeed, in five hundred times.

Prevention of Conception. The question is often asked. "Can conception be prevented at all times?" Certainly, this is possible; but such an interference with Nature's laws is inadmissible, and perhaps never to be justified in any case whatever.

During the past few years hundreds of works have been written, and many circulars distributed, to the females of the land, holding forth the idea that new remedies have been discovered for the prevention of conception. It is needless to state that such asseverations are impudent and wicked fabrications, and that the volumes and pamphlets are mere catch-penny devices, intended to deceive the public and enrich the pockets of miserable and unprincipled charlatans and imposters.

The truth is, there is no medicine taken internally capable of preventing conception, and the person who asserts to the contrary, not only speaks falsely, but is both a knave and a fool. It is true enough that

remedies may be taken to produce abortion after conception occurs; but those who prescribe and those who resort to such desperate expedients, can only be placed in the category of lunatics and assassins!

The only way that conception may be prevented, is by abstinence from sexual commerce during the first fourteen days after the cessation of the menstrual discharge; or else by the destruction of the vitality of the spermatozoa, while in the vagina, or before they pass off through the uterus and come in contact with the ova in the Fallopian tubes, while on their passage towards the womb.

Many plans have been devised by the French for the prevention of conception, but the most rational and certain means is to dissolve the spermatozoa while in the vagina, and before they pass into the womb. I have noticed a work recently published in Philadelphia, of considerable circulation, that professes to inform parents how they may have male or female children at their pleasure. It is scarcely necessary to remark that such opinion is absurd and erroneous. The ideas advanced are that the right testicle of the male secretes male semen, and the left testicle female semen. This supposition is equally ridiculous with that of the ancient physiologists, who imagined that the spermatozoa were miniature men and women.

FALSE SPECULATIONS.

There is not a particle of truth in such speculations. It is well known that men with only one testicle have been known to have had both male and female children. While upon this subject, it may be appropriate to mention certain vague and loose hypotheses that have recently been advanced.

Dr. Silas Wright, of New Hampshire, in a paper published in the "Buffalo Medical Journal," maintains that males are conceived a short time prior to the menstrual discharge, and females shortly after its cessation. In other words, if the ovum be impregnated before the appearance of the "courses," it will generally grow to be a male; if after the menses, a female child will result.

Again, in regard to the production of the sex, it has been stated that the right ovary produces male ova, and the left female ova. There is not a particle of truth in favor of either of these theories. On the contrary, there is abundant evidence against their probability. There are some other miscellaneous matters in reference to Generation that may be appropriately presented in the present chapter.

SUPERFŒTATION is literally the impregnation of a woman already pregnant. About the time the ovum arrives in the uterus, and even before, or about the time of conception, the uterus undergoes a change to prepare for the ovum. There is a sort of a lymph that forms on the outer surface of the lining membrane of that organ, of a flaky or velvety character, which is usually called the bed for the egg. This viscid mucus also blocks up the passage into the mouth of the womb, thus preventing subsequent conception.

Among the lower animals, and some few cases of the human female, there appears to be superfœtation. It is known that puppies of a bitch will resemble more than one dog with which she has had connection during the period of heat, which time may embrace ten or twelve days.

A mare which had been covered by a stallion was five days afterward covered by an ass, and bore twins—one being a horse, the other a mule.

CASES OF UNNATURAL GENERATION.

There are similar cases on record in regard to the human female. Women have borne children of different colors at the same parturition. In one of these instances, the mother acknowledged having admitted the embraces of a black servant a few hours after conjunction with her husband, who was white.

Eisenmann mentions the case of a woman bearing a full-grown male child, and neither milk nor lochia (a uterine discharge that takes place after delivery) occurring after birth. In one hundred and thirty-nine days afterward she gave birth to a fine female child when the milk and discharge came naturally. It was supposed that this woman had a double uterus, which, however, was not the case, as was verified by an examination after death.

Desgranges mentions a case of a woman who bore two girls, at an interval of one hundred and sixty-eight days between them. Fourneir speaks of two girls born at interval of five months. Starke instances a case of two children whose births were one hundred and nine days apart, while Velpeau relates that Mad. Bigaux had two living children at an interval of four and a half months between the first and second birth.

Dr. Mason published an account of a woman who was delivered of a full-grown infant, and in three calendar months afterward of another, apparently at full time. A woman was delivered at Strasburg, the 30th

of April, 1748, at ten in the morning; in a month afterward, M. Leriche discovered a second fœtus, and on the 16th of September, at five o'clock in the morning, the woman was delivered of a healthy full-grown infant.

Buffon related a case of a woman in South Carolina, who brought forth a white and a black infant; and on inquiry it was discovered that a negro had entered her apartment after the departure of her husband, and threatened to murder her unless she complied with his wishes. Moseley, Gardien, and Valentin, relate similar cases of black and white children born of intercourse with a black and white man on the same night, and the woman having children of different colors at the same parturition.

NUMBER OF CHILDREN AT ONE BIRTH.

As has been stated, each male dog will produce a distinct puppy; this no one can deny. The offspring will resemble the males that fecundate the bitch in succession. This is the case of the mare, conjoined to the stallion and ass in succession, and likewise with other animals. Hence, reasoning from analogy, if a number of healthy, vigorous men were to have intercourse in succession, immediately after the first conception, it is quite probable and very possible that similar fœtation should happen. Dr. Elliotson advocates superfœtation, and explains Buffon's case in this way. Magendie is of the same opinion. Medical men, and others, should bear in mind that women have had three, four, and five, and even six and seven children at one birth, while various cases of infants of different sizes being expelled in succession are recorded in our own medical journals.

Professor Velpeau, of Paris, speaking of Superfœtation, says: "In according all possible authenticity to these observations, regarding their exactitude as demonstrated, the idea which prevails in physiology on generation, permits an easy explanation. Two ovules can be fecundated one after the other, in a woman who accords her favors to two or more men, the same day, or in two or three days afterward; that is to say, to the moment when the excitation of the first coition causes the effusion of coagulable lymph into the uterus, to form the caducous membrane (decidua). These ovules may not descend through the uterine tube at the same time, and may be differently developed."

Valpeau, however, thinks superfœtation impossible after decidua is formed. According to Dewees, the closure of the os uteri after conception, does not take place for some days, weeks, or months.

Admitting superfœtation to be possible (says Ryan), and it cannot be denied in the early weeks of generation, we cannot decide paternity, unless when one infant is black or brown, and the other white, but if both fathers were of the same color the decision might be difficult, unless some physical mark on the infant existed in one of them."

Some writers maintain that superfœtation is possible during the two first months of pregnancy. The majority, however, hold it possible during the first few days after conception, before the uterine tubes are closed by the decidua. This is the received opinion, though there are cases on record which justified Zacchias and other jurists to conclude that superfœtation might occur until the sixtieth day, or even later.

RESEMBLANCE BETWEEN FAMILIES.

Influence Exerted by Parents on Offspring.—One of the most important laws of the reproductive functions, is the preservation of distinct species for an undeviating succession of generations, preventing the extinction of the species by being blended and lost in others.

Most persons are familiar with the resemblance that subsists between families from generation to generation, while it is well known that offspring inherit many of the qualities and peculiarites of the parents. Hereditary resemblance, however, is seldom ever complete—numerous differences being almost always observed in the features and other characteristics of the same family. Male and female children seldom perfectly resemble either the father or the mother, but a blending of the characteristics of both are readily recognizable in the offspring.

It might be supposed that as the mother furnishes the egg and its nourishment after conception, that the offspring would partake more of her peculiarities than of the father's. This, however, is not the fact. There will be quite as much resemblance to the father as to the mother, if such phenomenon be not in favor of the former.

The influence of the father must be imparted to the offspring at the time of the mingling of the spermatozoon and ovum, which is only momentarily. This being the case, it is reasonable to suppose that the greater proportion of the resemblance of the mother is imparted to the egg previous to conception; although it cannot be doubted that the mother exerts more or less physical and mental influence during the whole period of utero-gestation.

In some animals the male parent seems to exert the greatest influence

in the formation of the physical frame. This is particularly the case with dogs, horses, fowls, etc. It is known that the bantam cock will cause a common hen to lay a small egg, and a common cock a bantam hen to lay a large egg.

As a general rule it cannot be said that either the male or female in the human species exerts more influence than the other in the physical and intellectual conformations or peculiarities of the offspring. In some families the children will most resemble the father; in others, the mother's traits are the more predominant.

Dr. Walker, in an Essay, states that the upper and back part of the head usually resembles the mother's; while the face from the eyes downward most frequently resemble that of the father. The transmission of color seems to be better marked than other peculiarities. Two persons of different color cohabiting, and producing offspring, will produce a mulatto. In regard to color the preponderance seems to be on the side of the father. A dark man cohabiting with a white woman will produce a darker child than a dark mother conjoining with a white father.

COLOR OF THE PARENTS.

In some animals the color of both parents seems to be equally preserved. This is the case with piebald horses. In some breeds of horses it has been found that as many as two hundred and five of the offspring or product of two hundred and sixteen pairs of horses, the color of the parents was equally preserved. The qualities of the mind are perhaps as much liable to hereditary transmission as bodily configuration. Memory judgment, imagination, passion, diseases, and what is usually called genius, are often markedly traced in the offspring.

I have known mental impressions forcibly impressed upon offspring at the time of conception, as concomitant of some peculiar eccentricity, idiosyncracy, waywardness, irritability, morbidness, or proclivity of either or both parents. I recollect the case of a female who was quite a coquette before her marriage. She married against her parents' will, and went West with her husband. Having failed in his business, he was compelled to locate in his wife's neighborhood, and among her friends. This so humbled her pride that she excluded herself from society, and occupied the most of her time in reading the Scriptures and singing psalms, which seemed the only gratification for her mind. She conceived, and gave birth to a daughter while laboring under this religious melancholy

or mental peculiarity. The child, as soon as it was old enough to notice anything, exhibited a singular fondness for the Bible, and was constantly humming psalms.

I know a man whose mind was so much troubled in consequence of the cares of his business that he became extremely excitable and irritable of temper. His wife bore him a child while this mental disturbance continued. Before its birth, he remarked that its mind would be on the "high-pressure principle." This prediction some years afterwards was fully verified. There can be no doubt that the peculiar mental characteristics of a parent are often repeated in the offspring. In estimating mental and physical inheritances, however, it should be remembered that much will depend upon education, pursuits, and modes of life, as all have a strong tendency to overcome hereditary influence.

TRANSMISSION OF DISEASE.

The transmission of disease from parent to offspring, is often markedly noticed. Almost all forms of mental derangements are hereditary—one of the parents, or near relation, being afflicted. Physical or bodily weakness is often hereditary, such as scrofula, gout, rheumatism, rickets, consumption, apoplexy, hernia, urinary calculi, hemorrhoids or piles, cataract, etc. In fact, all physical weakness if ingrafted in either parent, are transmitted from parents to offspring, and are often more strongly marked in the latter than in the former.

Where both parents are affected with the same disease, the children will have the hereditary transmission more prominently developed than where only one parent is diseased. From observations made in upward of two hundred cases of consumption, I discovered that the child, which most resembled the parent that was consumptive, almost invariably contracted the disease and died with it before they had arrived at the middle period of life.

In order to be more perfectly understood, a supposed case may be presented. The father is predisposed to consumption and the mother to nervous affections. They have six children—three of them resemble the father in temperament and other physical and mental peculiarities—while the other three have equally as strong a resemblance for those of the mother. Those that partake of the traits of the father are most liable to consumption and to die of that disease, while those resembling the mother will inherit her infirmities. The children in whose organization are

blended the peculiarities of both parents are usually liable to their respective idiosyncracies and ailments.

This law I have found invariably correct. Taking facts like these into consideration, how very important is it for persons before selecting partners for life, to deliberately weigh every element and circumstance of this nature, if they would ensure a felicitous union, and not entail upon their posterity, disease, misery and despair. Alas! in too many instances matrimony is made a matter of money, while all earthly joys are sacrificed upon the accursed altars of lust and mammon.

CURIOUS FREAKS OF NATURE.

MARKS AND DEFORMITIES.—Marks and deformities are also transmissible from parents to offspring, equally with diseases and peculiar proclivities. Among such blemishes may be mentioned moles, hair-lips, deficient or supernumerary fingers, toes and other characteristics. It is also asserted that dogs and cats that have accidentally lost their tails, bring forth young similarly deformed. Blumenbach tells of a man who had lost his little finger having children with the same deformity. Injuries of the iris and deformities of fingers from whitlow are said to have been transmitted from parents to offspring. Such freaks of nature are possible, yet all such statements of peculiar anomalies are to be regarded with distrust, since it is well known that many maimed and malformed persons are the parents of children without such imperfections of physical appearance.

A belief is entertained that the frequent breeding in the same family has a tendency to deteriorate a race. This rule appears to be applicable also to the animal kingdom. In the human such deterioration seems to be both mentally and physically manifested. The marriage of first cousins, although recognized in this country by law, is strongly denounced by many physiologists as extremely inimical to the perpetuation of a pure-blooded and vigorous race. The inter-marriage of different nations of the same type, as that of a Caucasian branch with another branch of the same; or an African with another branch Ethiopian stock, will tend to the mental and physical vigor of the offspring of either type; but admixture of the Caucasian with the Ethiopian, will deteriorate the type of the former race.

An example of the admixture of one Caucasian race with other of the same order of genus, being productive of signal advantage is afforded

in the Persian race by their intermarriage with the same beautiful Circassian and Georgian woman. The same may be noticed in all civilized nations. The blending of the Saxon with the Celtic races, for instance, has an important bearing upon the temperament, mental qualities and physical conformations of the intermediate stock or issue.

There seems to be an advantageous union of the respective elements of each, increasing physical stamina and intellectual attributes, as well as adding to the symmetry, grace, beauty and manliness of both nations. The union of the mercurial, fiery, and impulsive with the cool and phlegmatic, tends to promote that medium and balance of temperaments which is desirable as the chief characteristic of a proud, noble and perfect man or woman, or even of a nation or people.

The peculiar features, idiosyncracies, or other peculiarities of the Jewish or Hebrew race, are strikingly identical wherever these people are found, in all parts of the world—from the simple fact that they rarely ever marry or mix their blood with other than Jewish people, or with other races, whether of the same Caucasian type or not. Were these "peculiar people" to amalgamate more largely with other Caucasian branches of the human family, no doubt the Jewish physiognomy would soon become greatly altered, or modified at least, if not much improved.

FINEST POSSIBLE PROGENY.

The law of Nature appears to be immutable in respect to procreation or reproduction. The more vigorous the races and types that commingle, the more certain it is that the product will be of an improved and exalted character. The breeders of fine cattle and other animals are cognizant of this principle of Nature, and accordingly select the purest breeds in order to ensure the finest possible progeny. The same law is applicable in husbandry, horticulture, flori-culture, etc. The choicest fruits, flowers and vegetables, are the result of a proper selection of the procreative elements and a strict observance of Nature's mandates and requirements. So with the human family. It is doubtless capable of wonderful improvement and exaltation, were there a judicious blending of the highest physical and mental attributes of the male and female progenitors of the species. The purer the parent stock, the more perfect will be the progeny, and the nearer will they approximate to the original or primitive type of excellence, or of organism.

The stronger principle very naturally will drive out the weaker.

Good and bad qualities will not permanently coalesce and produce any thing perfect. There will be a tendency either to good or evil. If the good element be the strongest, it will finally eradicate the evil element. If the evil principle be paramount that which is intrinsically good must succumb before its dominant power. There is evidently a tendency in every thing to return to the original type.

We have examples of this in the mixture of the black and white races—or rather types—of mankind. Whatever may be said of the unity of the human race, it would seem that these types are entirely distinct, and by consequence, could not have sprung from the same original parent stock.

According to the most reliable physiological and other data, there are at least four distinct types of man, as embraced under the terms Caucasian or white; the Ethiopian, or black; the Mongolian or yellow; and the Indian, or red, however varied or multiplied the branches of each may appear. They are perhaps as distinct in essential elements as the rat and the mouse are distinct, or the monkey and baboon, or the lion and the cat, and were never intended to intermix, nor will they ever coalesce if allowed to remain in their normal or natural condition. The very location in which these respective types of man are found, favors this theory.

DIFFERENT TYPES OF MEN.

The negro is as much indigenous to Africa, or its latitudes and climates, as is the lion and boa constrictor to the same regions of the globe; so with the other types of men to their native or specific latitudes. The banana is not found growing in the North, nor the apple in the South. So with flowers, fauna, and other objects of the animal and vegetable kingdoms. All have their fitting places, or locations, most adapted or suitable for their development, procreation or reproduction. The tiger does not thrive in a northern clime, nor will the bear or hog flourish in the torrid zone. The birds and fowls of a warm climate are different from those of a colder one, however they may resemble each other in many respects, or even when ranked in the same class, or of the same genus or species. These facts are self-apparent, and will require no special argument for their verification.

Take, for example, the crossing of the black and white races of man. The offspring of each successive generation becomes more nearly allied to the purest breed of the two—which is that of the white or Caucasian

type. The progeny become whiter and whiter until the dark or negro element is entirely obliterated. On the contrary, by no process or alchemy of nature can you ever convert the progeny of a black man by a white woman to the dark color of the African father. The vis vitæ of the two distinct races seem antagonistical and inharmonious, and therefore cannot equally commingle. That of the Caucasian, being more highly endowed, overcomes that of the African. The latter, after several successive generations, become completely extinct or absorbed by the former.

This is illustrated by analogy, in the fact that the rat of Norway, imported into England and America, has totally driven out the original common rat of those countries. This seems to be a universal law of Nature, intended to protect and preserve distinct types—to save the weaker from the stronger. This truth is confirmed in the fact that hybrids rarely propagate, or, if they do, it is only for a limited and definite period. The dominant principal must always prevail. Hence it is easy to believe in hereditary predisposition, or in the transmission of diseases or peculiarities from parents to offspring.

APPEAR IN AFTER GENERATIONS.

Not only is this the fact, but such abnormal peculiarities may extend through several successive generations. Sometimes they are intermitted or lost in one immediate generation to appear in a subsequent or later one, even to the third or fourth remove from the original malformed or diseased parental stock, agreeably to the text of Scripture, that the "sins (or infirmities) of the parents are visited upon the children to the third and fourth generation."

It becomes a matter of wonder when we come to inquire into the peculiarities of hereditary transmission, that two microscopic specks, such as the egg of the female and the spermatozoon of the male are capable of transmitting during three or four subsequent generations, all the weaknesses and imperfections of parents. This law, however, even becomes the more surprising when we come to inquire into the influence exerted by the minds of the parents upon these microscopic atoms at the time of conception, which is to unfold them into the future human being.

We have already given several cases in corroboration of the influence exerted by parents upon posterity, even in the most rudimental or incipient form of embryotic existence. Combe, in his great work on the "Constitution of Man," sustains similar views in an admirable manner.

The celebrated Darwin, though he indulged in many chimerical notions, among others that man was originally developed from a tadpole—held views respecting the influence of the parents' mental qualities upon the offspring at the time of conception, that appear to be based upon the clearest facts and the highest philosophical deductions.

Both of these authors demonstrate that children conceived during or after drunkenness or debauchery are liable not only to a predisposition to intemperance, but to a debility, both of mind and body, amounting in many instances to idiotcy itself. The same is proved of the venerous or amorous impulses. In short, according to the predominance of any propensity or frame of mind, the offspring may be a genius or a dolt, a sentimental swain or an unfeeling brute, a thief, a robber or a murderer.

PHYSICAL AND MENTAL TRAINING.

These notions are corroborated in too many instances to gainsay their verity, yet I am constrained to think that more importance is attached to them than they deserve, in view of the power of secondary causes that may be brought to bear for the correction, amelioration or eradication of such inherent proclivities. Such influences, no doubt, are capable of being materially controlled by the mother, not only during the embryotic and fœtal life of the offspring, but in its physical and mental training in a subsequent period, after it arrives at a proper age, or years of intelligence and reflection. "Just as the twig is bent the tree's inclined," is an axiom as applicable to the human creature as to the tree or shrub.

Hence the necessity of having mothers properly educated and fitted to mould the minds and mollify any physical and mental defect in their offspring, in the earlier stages of their existence, as well as having them to understand those laws which are calculated to ensure the rarest beauty and vigor of their progeny, as concomitant of a wise and judicious wedded union of the sexes, and those adjuncts of health and happiness flowing out of pure habits and a rational dietetic and hygienic system compatible with the natural vitality of the general organism. As the potter moulds his clay into beautiful and fantastic devices, so it is largely in the power of woman to assist Nature in forming the most perfect and glorious of human intellectual and physical developments and conformations. She should ever strive for her own perfection, and should never think of marriage until she can possess the proper mental and physical qualifica-

tions to become a *mother!* Indeed, the very name of mother is significant of everything that is pure and beautiful and lofty. The model men—the great and wise and good men—in all ages of the world, owe their exaltation to the pure minds, noble hearts, and heavenly virtues of beautiful and adorable MOTHERS!

The effect of the imagination of mothers upon their progeny, at the time of conception and after, has been doubted and ridiculed by many physiologists. Doubts and sneers and ridicule, however, are the weapons of ignorance and imbecility, and can never be used as arguments to overthrow palpable and irrefragable facts. Besides what has been advanced in the foregoing pages, there is a great abundance of evidence still at hand to substantiate all that has been affirmed in that regard. The same influence will hold good not only in the human being, but perhaps in all of the lower orders of the animal kingdom.

REGULATING COLOR OF THE COLT.

It is related that when a stallion is about to cover a mare, and the color of the stallion be objectionable to the groom, if he will place before the mare during the time of sexual conjunction, a stallion of the desired color it will have the effect upon the mare to produce the required color in the foal, or a color different from that of its sire. This method has been repeatedly tried with unvarying success.

The tyrant Dionysius supposed that handsome pictures and other objects influenced the minds of females during pregnancy so as to have a bearing upon the intellectual and physical attributes of their offspring. Hence, he was in the habit of hanging beautiful paintings in his wife's chamber, in order to improve the appearance of his children. Walker, in his work on "Beauty," supports a similar hypothesis.

The sacred Scriptures speak of Jacob placing the peeled black and willow rods before the ewes as they went to drink, and the consequence in the ring-streaked, speckled and spotted colors of the offspring.

The mother of Napoleon the Great, before he was born, followed her husband in his campaigns, and was subject to all the dangers and vicissitudes of a military life. To the influence of the mind of the mother, during utero-gestation, has been attributed the military skill and ambition of the illustrious Emperor of France. On the other hand, the murder of *David Rizzio*, in the presence of *Queen Mary*, was the death-blow to the courage of her son, *King James*, and caused his strong dislike to

edged tools, which dislike was a peculiar characteristic of that crafty pedantic monarch.

It is well known that some contagious diseases are readily transmitted from mother to offspring during utero-gestation; such as syphilis, small-pox, measles, etc. Violence and severe affections of the mother are known to destroy the fœtal child, and expel it from the uterus. Poisons have exerted the same influence when taken by the mother during pregnancy. This is easily explained and understood in the fact that poisons enter into the circulation, and that the same blood that circulates in the mother also supplies the fœtal child with nourishment. By the same philosophy it is comprehended how a cancer may be made to grow on the breast of a female, by the concentration of her mind on the idea or possibility of such a result, or that cancers may be also cured through a similar force or influence of the imagination upon the fact. Dr. Warren, of Boston, instances a case of this kind.

EFFECTS OF VIOLENT EMOTION.

Jet black hair has been changed to white, as a result of some violent emotion, fear, etc. The milk of mothers has been rendered poisonous, so as speedily to destroy the offspring, through the influence of passion or other cerebral disturbance. Such phenomena are explained on the principle that nutrition, secretion, excretion, assimilation, and in fact, every function of the animal organism is controlled by the nervous system—that the force generated in that system, called the "nerve force," is to the physical system what steam is to the machinery. It is by deranging this force that we have disease—first of functional character, which if not removed, soon causes a change in the structure of the organ. A cancerous tumor is a change in the nutrition of the part by an interference in some way with the function of the sympathetic nervous system, either by causing a change in the blood by interfering with digestion or assimilation, or by causing a direct change in the nutrition of the part.

It is proper to add, however, that women are often violently affected in many ways without leaving evidence of any abnormal peculiarities in the mental or physical characteristics of their offspring. The mysteries of nature are often inexplicable, but it is certainly a wise philosophy never to interfere improperly with her regular course of operations. The giving way to passions, freaks and whims, is always more or less productive of

mischief, not only to mothers, but the offspring is liable to be affected by them. An unnatural propensity should be curbed, if practical. A passive, cheerful mind, agreeable society, suitable amusements, recreations, and exercise, with a careful attention to food and clothing, etc., all have a wonderful efficacy in dispelling megrims, moping melancholy, and other abnormal influences, quieting nervous irritability, purifying the blood, and inducing joyous, bounding health, with intellectual strength and physical beauty, and the highest bliss and happiness possibly incident to a terrestrial state of existence.

Truths of such importance as detailed in the foregoing pages are certainly worthy of the serious consideration of every married lady, or females of marriageable age, not only as a guide to save them multiform diseases and miseries, but as a means for the attainment of the highest and intellectual perfection compatible with the organism of woman, in the present state of existence.

PREGNANCY OR GESTATION.

CHAPTER XIII.

THE suppression of the menses is not a certain sign of pregnancy, although it is one of its most important concomitant symptoms. Exposure to cold or wet, a shock to the nervous system from fright or other causes, uterine congestion or structural disease of the womb,—any of these may cause suppression. There are instances in the history of pregnancy when women menstruated regularly through the whole period of utero-gestation (pregnancy); and it often occurs that women menstruate for the first two or three months. Baudelocque and Dewees mention cases when women menstruated only during pregnancy.

The enlargement and shape of the abdomen is not always a sure indication of pregnancy, and certainly not during the first three months. At the end of the third month, however, some physicians believe that they can detect a flatness in the lower part of the abdomen, which is produced partly by the intestines being pushed upwards and sideways, and partly by gaseous accumulations. During the first month, the process of gestation causes more blood to flow to the uterine region; and the womb, in adapting itself to the new condition, causes a sympathetic irritation of the alimentary canal, which induces formation of gases that render the abdomen more tense and full: but this soon disappears, leaving the abdomen more natural, apparently destroying often the sanguine hopes of the would-be mother.

Gases are often a concomitant symptom of pregnancy. In some cases, they are so troublesome as to suddenly collect in the abdomen; and cause such distension as to throw the patient into spasms.

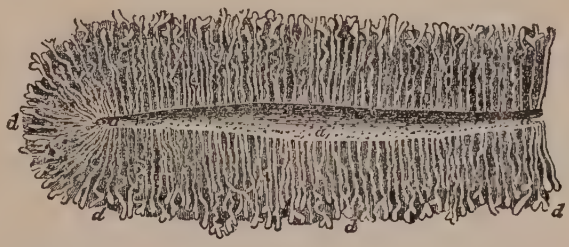
After the third month, the abdomen acquires a very perceptible prominence, which gradually increases and rises, until it fills up the whole abdominal region.

The increase and modification of the abdomen is not in itself a sure sign of pregnancy; for some women, after marriage, become very fat; others are so constructed as to show very little increase; while others

show it very soon and plainly. Women having a large frame and large pelvis would show very little abdominal prominence; but little women with small pelvis, or women having the lower part of the spine much curved forward, would show a great deal. This is to be borne in mind in judging of the advancement of pregnancy when there are no data to go by.

Although a gradual increase of the abdomen is a strong indication of pregnancy, there are often diseases that simulate it Dropsy may be present; tumors may be growing in the abdomen. These exceptional cases do not often interfere, however, with the diagnosis.

A woman oftentimes cannot tell whether she is pregnant or not until the fourth or fifth month; when quickening occurs, and there is no more room for doubt. There are, however, rational or sympathetic symptoms accompanying the suppression of the menses, strongly indicating that pregnancy exists. A month or two after conception, the *mammæ* (or breasts) enlarge, and often become the seat of slight pains and pricking sensations; the nipples also enlarge, become tumid and darker; the areola, or ring around the nipples, spreads in circumference, and assumes a darker color, in brunettes becoming almost black. The little follicles, or pimples, also become more prominent and darker, and the veins more blue. These symptoms and changes, however, often occur from sympathy with a diseased womb. And some women state that they experience them before and during every menstruation.



SECTION OF THE LINING MEMBRANE OF A HUMAN UTERUS AT THE PERIOD OF COMMENCING PREGNANCY,

Showing the arrangement and other peculiarity of the glands *d*, *d*, *d*, with their orifices, *a*, *a*, *a*, on the internal surface of the organ. Twice the natural size.

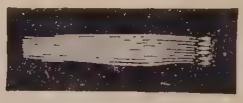
The presence of milk in the mammæ is an additional sign, although old women and young girls have been found with milk in their breasts.

Morning sickness—nausea or actual vomiting on rising from bed—is another rational sign. The term is misapplied, however; for the sickness may come on after every meal, or at any time during the day or night. Many are fortunate enough to escape this distressing symptom entirely; others are subject to it during the first two or three months and the last; others are afflicted by it through the whole period, becoming

thus much exhausted, and their life, in some instances, put in jeopardy. This symptom is so common, that it is sufficient in some women, to pronounce pregnancy at its appearance. It generally lasts from six weeks to three months, when a patient experiences a great relief until the eight month; then it often re-appears.

It is advanced, also, and it has been pretty thoroughly tested by *accoucheurs*, that a certain change in the urine of a pregnant woman takes place, which may add to the circumstantial evidences of pregnancy; and that is, the presence of a mucilaginous principle called Kyestein. This may be detected in the following manner: take half a pint of the urine of a woman supposed to be pregnant, passed early in the morning, before breakfast; put in a glass cylinder or a tumbler; cover it with paper, and let it rest in a safe place; after two days, a dense pellicle or scum of fat-like matter will be found on its surface, which will increase for two or three days longer, and then evolve a powerful odor of putrefying cheese.

APPEARANCE OF THE SEMINAL GRANULES.



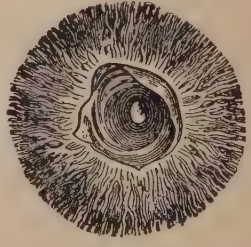
APPEARANCE OF THE SEMINAL LIQUOR.

For the sake of brevity, I will give here the recapitulation of the rational signs of pregnancy, according to Gazeaux.

First and Second Months.—Suppression of the menses (numerous exceptions). Nausea, vomiting. Slight flatness of the lower part of the abdomen. Depression of the umbilical ring. Swelling of the breasts, accompanied with sensations of pricking and tenderness.

OVUM 14 DAYS OLD.

Third and Fourth Months.—Suppression of the menses continued (a few exceptions). Frequently continuance of the nausea, and sometimes vomiting. Less depression of the umbilical ring. Augmented swelling of the breasts, prominence of the nipples, and slight discoloration in the areolæ. Kyestein in the urine.



OVUM AND EMBRYO 15 DAYS OLD.

Fifth and Sixth Months.—Sensation of quickening, motion in the abdomen. Suppression of the menses continued (some rare exceptions). Vomiting and nausea disappear (few exceptions). Considerable development of the whole sub-umbilical region. A convex, fluctuating, rounded abdominal protuberance, salient

particularly in the middle line, and sometimes exhibiting the fetal inequalities. The umbilical depression is almost completely effaced. The discoloration in the areolæ is deeper, tubercles elevated. Kyestein in the urine.

SEVENTH AND EIGHTH MONTH.—Suppression of the menses continued (exceptions very rare). Active movements of the fœtus (child). Disorders of the stomach (rare). The abdomen more voluminous. Sometimes pouting of the umbilicus. Numerous discolorations on the skin of the abdomen. Sometimes a varicose and dropsical condition of the vulva and lower extremities. Extended and deeper discoloration of the areolæ; breasts still larger, and nipple more prominent; sometimes flow of milk. Kyestein in the urine.

MOTION OF THE CHILD.

FIRST FORTNIGHT OF THE NINTH MONTH.—The vomiting frequently re-appears. The abdominal swelling has increased, rendering the skin very tense. Difficulty of respiration. All other symptoms increase in intensity. Sometimes pain in the back, and other irregular pains.

LAST FORTNIGHT OF THE NINTH MONTH.—The vomiting often ceases. The abdomen is fallen. The respiration is easier. Great difficulty in walking. Frequent and ineffectual desire to urinate. Hemorrhoids, augmentation of the varicose and dropsical state. Pains in the loins.

"Quickening" is the common term by which is generally meant the first cognizance that a mother takes of the child's moving. This first motion of the child must not, however, be understood to be the beginning of life, but simply the beginning of muscular action. The period in which it occurs varies; but, in the majority of cases, it dates from the eighteenth week of utero-gestation. The child may be felt earlier or later, stronger or weaker, probably according to its constitutional strength and the room it has to move in.

I have seen cases where the mother prognosticated a strong, large child, from her feelings; while, to her great surprise, she gave birth to a small and puny infant. The great movement during pregnancy was due to an immense quantity of water in the sac, in which the child could float and move freely. Whenever the mother cannot give approximate data of conception, she may safely calculate the date of the end by adding four months and a half to the date of quickening. These

peculiar movements at first often induce sensations of syncope, or fainting, which gradually disappear as the woman becomes accustomed to the cause.

The sensation of quickening does not remove all doubt as to the existence of pregnancy. Some women have not only felt this, but have even thought of having seen the movements of the child through the abdominal walls, and yet were not pregnant. Again; women have been found pregnant when they had not been conscious of any sensation of quickening. The movements of the child may be so slight as to be imperceptible to the mother.

Two hundred and eighty days is the general average of the duration of pregnancy, which may be divided into ten lunar months, or nine calendar months and ten days.

Pregnancy is generally dated from the last appearance of the menses. In this, however, physiologists have differed; probably from the fact that many women have been disappointed by this calculation; and this question cannot be settled as long as it is impossible to exactly tell when conception takes place.

NUMBER OF DAYS FOR GESTATION.

The accepted theory is now, that an ovum descends into the womb immediately before or after every menstruation; that it remains there eight or ten days, exposed to fecundation; that, after this, it losses its vitality, and passes off, after which the female is not liable to conceive until the next operation of the ovaries. This theory has a great deal that is plausible, but has been found untenable in so many instances, that it is not to be relied on. An *accouchcur* of great renown and experience has given a hundred and fifty cases, in each of which he had noted the precise date of the last appearance of the menses. These cases, which will be found below, show the impossibility of making an exact calculation of the time of delivery from that date.

Five	women	were	delivered	in	from	252	to	259	days.	37th week.
Sixteen	"	"	"	"	"	262	"	266	"	38th "
Twenty-one	women	were	delivered	in	from	267	"	273	"	39th "
Forty-six	"	"	"	"	"	274	"	280	"	40th "
Twenty-eight	"	"	"	"	"	281	"	287	"	41st "
Eighteen	"	"	"	"	"	288	"	294	"	42d "
Eleven	"	"	"	"	"	295	"	301	"	43d "
Five	"	"	"	"	"	303	"	306	"	44th "

It can be well understood, that if a woman conceives just before her

menses are due, and the menses become suppressed in consequence, and nine months are counted from the time of the appearance of the last, the calculation will fall short four weeks; thus giving the false impression that the woman has been pregnant ten months before giving birth to the child.

ADVICE TO A WOMAN WITH CHILD.—First of all, be hopeful. There is not one case in a hundred in which life is imperilled; and there is no reason why you should be that one. Take your chances with the ninety-nine. Do not appeal to old women, or listen to their stories. If you have any apprehension, apply to your physician, who will assist you in case of need. Be moderate in every thing; shun balls, heated rooms, crowds and excitement.

PRACTICAL ADVICE.

Avoid unpleasant sights, and do not listen to frightful stories: there are instances reported, which, although no physiologist can explain them, have created such an impression upon the mind of a woman carrying child, as to cause her to give birth to an infant bearing marks of these impressions. Still, these instances are very rare. Dr. William Hunter of London, in two thousand cases of labor, was accustomed to ask, as soon as the woman was delivered, whether she had been disappointed in any object of her longing, whether she had been surprised by any unusual shock; and, when answered in the affirmative, did not in one instance find the circumstances to coincide with marks on the child. Therefore, while I caution you against unpleasant impressions, I would by no means arouse in your minds any tendency to dwell on the fear of such an event.

Take daily exercise in the open air; do not lace; do not run; do not jump; do not drive unsafe horses; give up dancing and riding; do not plunge into cold water. Many women in your condition will tell you they have done these things, and no harm befell them; still, do none of them. Sponging your body will answer for cleanliness, and a happy heart for the dancing and riding.

If you are weak, do not run for extolled tonics, for beer or whiskey. Apply to your physician: he will discover the cause, and find the remedy.

Do not take medicines (purgatives, in particular) on your own or your friends' advice: your physician is the only person capable to prescribe for you. I have known an "innocent purgative" to be followed by frightful consequences.

In your diet use nothing that induces constipation.

Remove from your chest, waist and abdomen any article of clothing that exerts undue pressure.

Avoid all practices that increase nervous irritability, such as immoderate use of coffee or tea; also, operations on the teeth.

Do not indulge in inordinate or morbid appetites. A woman in pregnancy may have unusual aversions or longings. It will do no harm to avoid what is repugnant to you; but it may be detrimental to your health to satisfy the longing for slate-pencil, chalk, or other deleterious substances which sometimes women in your condition crave.

But, above all, keep a cheerful mind; do not yield to grief, jealousy, hatred, discontent, or any perversion of disposition. It is true that your very condition makes you more sensitive and irritable; still, knowing this, control your feelings with all your moral strength.

Your husband should be aware, also, that this unusual nervous irritability is a physical consequence of your condition, and would therefore be more indulgent and patient, unless he is a brute.

AVOID VIOLENT EMOTIONS.

If you believe that strong impressions upon the mother's mind may communicate themselves to the fœtus, producing marks, deformity, etc., how much more you should believe that irritability, anger, repinings, spiritual disorders, may be impressed upon your child's moral and mental nature, rendering it weakly or nervous, passionate or morose, or in some sad way a reproduction of your own evil feelings! And, indeed, this is more frequently found to be the case than is the physical marking of a child by its mother's impressions.

Fears of danger in bearing children, so common in pregnant women, are very seldom well founded. If a woman has no deformity of the spine or pelvis; if the distance from hip to hip indicates no unusual narrowness; if, as she stands, she sees that she is as well formed as the majority of women; and if she knows of no objective reason herself,—she should conclude, without any further thought, that she is perfeetly able to bear children. A deformity which would disable a woman from bearing children would be of such magnitude as could hardly escape her notice.

Experience does not show that a woman's first labor is necessarily a difficult one. It often occurs that her first labor is an easy and short one; while subsequent ones are more protracted and painful. It depends upon the condition of the soft parts of the woman at that period, whether more

or less relaxed; and also upon the size of the child, which cannot be prognosticated.

The size of women is never a hindrance in labor: small women bear large children with comparative ease.

The Creator never intended that pregnancy should be a source of disease; but ignorance, false modesty, fashion, previously-acquired diseases of the womb, errors of regimen and diet, a weak constitution, bad training in girlhood, often lay the foundation of serious troubles during pregnancy.

These diseases I will discuss separately, and suggest the means to avoid and to alleviate them. At the head of them stand mental disorders. Such are, undefined fear of impending evil; anxiety about the future, and fear of dying; many forebodings and gloom, even to despair.

SERIOUS MENTAL DISTURBANCES.

These mental disturbances, although they may have no cause, are serious in the extreme. It is important to the mother's well-being, and to a happy termination of her labor, that these mental illusions should be conquered. Serious consequences have been produced by an overwrought imagination. This dark phantom that hangs over the reason of the already burdened patient should be chased away by gentle reasoning and moral suasion.

Mothers, your God is a God of love, and would not threaten with danger her who is the mother of mankind. A special reason exists why the Great Father should extend his protecting hand over a woman who bears a human being in her womb. Fear and despondency is not gratitude or thanksgiving to Him who willed it that to bear a child should be a gift to woman, who can love and protect her offspring with all the strength of her soul. In choosing Mary as the mother of His only-begotten Son, he did not surround her with impending dangers and with fear of death. Her heart beat with joy that she was to beget a child. Her prayers were thanksgivings for the great privilege. You are, as she was, a creature of your God. Away, then, with your gloomy thoughts! Rejoice that you are one of the elect! In a short time, a human being —flesh of your flesh, a creature of your God—will lie on your lap to ask from your lips the smile of a happy mother.

To you, husbands, I say, Reflect upon the manifold inconveniences and annoyances your wife must labor under while pregnant. The love which you gave her before the altar of God—double it now. Think of the

suffering you are spared, which she must undergo to give you the delight of paternity. In doubling your attentions, in anticipating her desires, in calming her fears, in soothing her irritations, you do only your duty, though it should also be your highest pleasure. Do it cheerfully; let your devotion spring from a manly heart,—from the heart of a true husband. What was a molehill to your wife before must be a mountain now. Smooth her rugged path; shade her from the burning flame of mental agitation; encourage her, inspire her with hope; and when the time comes that she lies prostrate, her face beaming with happiness at the sounds of her first-born, thank God that you have been kind to her.

The hygiene in these cases is purely a moral one, and must be conducted by a careful and loving husband and affectionate relatives or friends. When forebodings and gloom pervade the mind of her who is to become a mother, reasoning may be in vain. In this case, her condition should not be totally ignored, lest offence be given; but unknowingly to her, and apparently unaffected by her fears, simple means may be employed to throw her off the gloomy path of her thoughts. The wife's tastes and predilections when in health being known, there are a hundred things that can be done to attract her from her sorrow of self into innocent distractions and pleasures. This must be done without an effort or an apparent purpose, else the object may be defeated by making her aware that care and kindness is induced by solicitude. Bring home a good book, a favorite fruit, or a mutual friend with whom you may enter into an innocent conspiracy for her good.

Invite her to take a walk; and then do not rush her through an unfeeling crowd, but walk leisurely in a favorite place; call her attention to objects of interest, and even to trifles, that may have amused her before. Have some congenial friends at home; a game of whist, or any sort of innocent game, and moderate gayety, a little surprise-party of dropping-in friends,—some genial, happy faces. If it be necessary, an innocent plot with your friends may be formed to get her out some evening to a social meeting, a lecture, a concert, a lively, pleasing drama. If the rooms or halls are too hot or crowded, you may show solicitude enough to take her home. Cheerful fireside, unstinted sacrifices, loving sympathy, will rob the mind of many a dark shadow. Change of scene; short, easy journeys to favorite cities or spots, is a source of pleasant and healthy excitement that will invigorate body and mind. Be never weary, and success and happiness will crown your noble efforts.

MALADIES DURING PREGNANCY.

CHAPTER XIV.

IN connection with this subject, I have already mentioned morning sickness as a concomitant symptom of pregnancy. It is probably the most reliable sign. Some women have only to feel the return of this discomfort to declare themselves pregnant. Vomiting can, nevertheless, occur under different circumstances; yet when the tongue is clean, and free from all appearances indicating disease of the abdominal viscera, and the vomiting persistently and periodically returns on rising from bed; before, after, or during meals, at certain hours of day or night,—physicians accept it as a conclusive evidence of pregnancy.

It may appear immediately after conception; but it more frequently commences after the second or third week. It may continue for three or four months,—generally not beyond the third,—and sometimes it will not cease until quickening. It may continue irrepressibly through the whole period; but, generally, it only re-appears after the eighth month, and ceases when the enlargement descends in the abdomen, two weeks previous to confinement.

The frequency and intensity of the vomiting varies in different subjects, and often in the same. A woman may vomit only in the morning, before eating,—a sort of viscid, glassy mucus, which may be accompanied by some green bile, particularly if the straining is severe. Some vomit after eating, and then easily emit the ingesta. It happens, also, that vomiting is induced after a few mouthfuls of food; and the patient is able to return and finish her repast without inconvenience. There are distressing cases in which even the smell of food provokes vomiting. Again, the patient has nausea, and makes all the efforts of vomiting without being able to do so. In cases where the straining is very severe, the

shock may be communicated to the lower part of the abdomen, causing distressing pain, which, however, gradually wears away in a few hours.

Physiologists and pathologists have endeavored to explain this phenomenon, but without success. There is no doubt that it is connected with the changes of the womb; for we often see vomiting in patients affected by a diseased womb, and there are many who vomit during the first days of every menstruation. They have endeavored, also, to trace these obscure sympathies; but never have been able to go beyond the fair supposition that the sympathy exists. Some pathologists—like Bennet—insist that the nausea is always connected with a diseased condition of the womb; but this is not often true, because thousands of women who vomit during pregnancy are without any disease whatsoever.

During the later months, we may account for it by the fact that the swollen womb interferes with the locality of the stomach, pressing it upward. We know how easily we can be made sick by a slight pressure on the stomach. This would account for the relief obtained during the last two weeks, when the womb descends in the basin, preparatory to the expulsion of the fœtus, and yields the needed room to the stomach.

HOW THE SYMPTOMS ARE AGGRAVATED.

Nervous susceptibility may be greater in some than others. Constitutional disturbances, a reckless disregard of the laws of digestion, indulgence in obnoxious articles of food, devotion to the baneful fashion of small waists, may greatly aggravate this distressing symptom.

The theory that the process of expansion is the cause of vomiting is the most reasonable to my mind: and the objections of Gazeaux, because some women have been afflicted by vomiting more during a second pregnancy than during a first one, are not sufficient to overcome its probability; since the rigidity of the womb may be different at different times, and vary according to constitutional or functional abnormalities during the period of non-pregnancy. In attempting to expand the mouth of the womb in dysmenorrhæa, I have been often arrested by the complaint that the operation produced nausea.

Even the periodicity of the vomiting is not sufficient reason to overcome these premises; for the womb is the organ of periodicity *par excellence*. Does not the womb give periodical pain during labor? Why is not its contraction continuous and final? If its contractions for the expulsion of the fœtus are periodical, why should not its dilatations in

accommodating itself for its abode and growth be the same? The process of labor gives other evidence in favor of this theory. While the contractions of the fundus of the uterus, and the dilatation of its mouth, are going on to expel the fœtus, the patient often vomits freely. Again: a patient may increase her contracting pains by walking, by drinking a glass of water or a cup of tea. Thus we can appreciate this mutual reflex action of the stomach upon the womb, and, *vice versa*, the womb upon the stomach; a sympathy that may be excited from either end.

Irrepressible and long-continued vomiting, however, must be connected with some disorganization, maintaining a constant irritability of the womb; such as ulcerations, displacements, or congestion: or it may be due to an excessive sensibility of the nervous system. This vomiting may be very severe and intractable, particularly when no cause can be ascertained. Premature labor has often been induced on the plea that the life of the patient is in danger; but this high-handed measure is sometimes distrusted by the fact that the most irrepressible vomiting has suddenly ceased without medical or surgical interference. A shock from sudden joy or fear, it has been recorded, has stopped the vomiting, never to re-appear. This would lead us to suppose, that, in those instances, it was a nervous disturbance suddenly changed by stronger impressions.

THE FUNCTIONS OF THE STOMACH.

In irrepressible vomiting, however, the womb should be examined, and, if found diseased, proper medical or surgical treatment should be applied.

Simple vomiting may be borne with comparative comfort and patience; it will produce no disastrous effects on the patient,—nay, in some cases it seems only to deplete the system, which is a natural treatment in plethora, against which we have no gainsay. Vomiting that requires medical treatment is rare; still, when a constant vomiting interferes with the functions of the stomach, and wears away the patient, medical assistance is absolutely required.

The apprehension that excessive vomiting may affect the well-being of the child in the womb must be done away with; for there is not one instance recorded where it is proven that the child has thus been affected. God, in His loving and mysterious way, has taken care that the germ of mankind should be well protected.

The best treatment is a cheerful mind; avoidance of mental excite-

ment (passion, anger, fear, etc.) ; exercise in the open air without fatigue; early hours to rest, and early rising. When the sickness overtakes you on rising from bed, try taking breakfast before rising. A few mouthfuls of pulverized ice, swallowed quickly, often relieve nausea. In distressing vomiting, ice applied to the pit of the stomach has given relief, although it is a hazardous remedy. Champagne, in many instances, has relieved vomiting very promptly : I have prescribed it with success for nausea of jaundice and cholerine. A change of the usual hours of eating, the use of lemonade, Vichy-water, or a few teaspoonfuls of sherry-wine, brandy, ether, peppermint-water, or a watery solution of Calomba-root, have relieved cases.

A good appetite should be satisfied ; but a voracious one should be allayed by light food, taken often, in not very large quantities.

UNNATURAL LONGINGS.

I have already mentioned appetites for unusual or obnoxious articles. As moral persuasion is almost always useless in these cases, care should be taken that the indulgence allowed may not seriously interfere with digestion and health. The importance that people attach to these longings is unfounded, and should not be gratified to any great extent.

It is true, that, in many cases where the stomach craves unwholesome articles, they have been taken with impunity : still, prudence is a shield against accidents.

In loss of appetite, it is useless to force the patient to eat ; then the most nourishing food should be concentrated in small quantities ; such as beef-tea, calf's-foot jellies, eggs, cream, etc. A little wine may be useful ; but medicated tonics should not be taken without the advice of the physician. Keep in the open air ; take gentle exercise, walking particularly.

The diet should consist of wholesome articles, such as beef, mutton, lamb, fowl, game, etc. (either roasted or boiled, in preference to broiled and baked) ; and all salted, spiced, or smoked aliment ought to be taken sparingly, or not at all, if the stomach is delicate, as they generally derange it. The flesh of young animals—as veal, lamb, chicken, and certain kinds of fish—is less nutritious than the other articles mentioned, and is therefore considered lighter. Fatty food—as pork, duck, eel, butter, oil, etc.—generally disagrees with nervous, bilious, or dyspeptic persons, and those who suffer from indigestion, flatulency, and lowness of spirits,

especially during pregnancy, when there already is more or less tendency to nausea and vomiting.

Farinaceous food—such as bread, rice, potato, beans, peas, sago, arrow-root, and tapioca—is highly nutritious, though it may in some cases induce heartburn, flatulency, and indigestion. Mucilaginous aliments —as carrots, turnips, parsnips, cabbages, and asparagus—ought to be taken but sparingly by pregnant women, and those who suckle their infants; and then a little pepper should be used with them. Sweet food—as sugar, molasses, candies, dates, fruits, etc.—should be used in moderation. Finally,—as the stomach is irritable and delicate in most pregnant women during the first months,—it is highly necessary that their food should be both cut small, and then well masticated, to render it more fitted, and more easily acted upon by the stomach; and drink, too, should be used sparingly while eating; for, if the gastric juice be too much diluted, it cannot act upon the food in an efficient manner.

THE MOST EFFECTIVE TREATMENT.

And, above all, I recommend that no ices should be taken on full stomach, as heat acts a very important part in digestion. Coffee and tea should be used moderately.

A Belladonna Plaster over the region of the womb often assists in relieving nausea. It should be taken off as soon as there appears an undue dilatation of the pupil of the eye.

Constipation is a disorder that often accompanies pregnancy, and may be the source of many troublesome symptoms, and, in aggravated cases, a cause of dangerous irritation to the impregnated womb. Women who were never of costive habit before may become so now; and women who were subject to it before may become so much worse now as to be unable to have a healthful evacuation without the interference of some mechanical or medicinal means.

This may be due, partly to the increased action of the womb, drawing as it were, blood and nervous force from neighboring organs; partly to the mechanical pressure which the womb, in its enlarged condition exerts upon the rectum; and, also, to the indolence which a woman in a state of pregnancy may indulge in, or to a deficiency of bile, which, in cases of hard vomiting, is pressed into and ejected from the stomach.

Whatever may be the cause, and whatever may have been her habits before, a pregnant woman should now pay particular attention that masses

of fæces should not accumulate in her bowels. Piles would be almost a necessary consequence from pressure on the hemorrhoidal veins. Bearing-down pains, pains in the back, flatulence, colic, displacement of the womb, swelling of the veins of the legs (increasing the tendency to dropsy of the feet), headache, giddiness, sleeplessness, may follow.

In women who easily miscarry, the undue pressure on the womb will increase the liability; and during labor, fecal masses may expand the descending intestines and the rectum, so as to obstruct the exit of the child, or be expelled, during labor, by the powerful pressure of the descending womb, to the great annoyance of the patient and attendants. A disregard of this costive condition has placed ladies in the most unpleasant and awkward predicaments, as well as in real danger. It has sometimes been known to produce inflammation of the bowels, so fatal in the puerperal period.

Appropriate diet, and regular exercise in the open air, is most important. To women thus affected, I would recommend especially not to eat chalk, or take magnesia as a laxative; for both have been known to become hardened, or have hardened some of the fæces, so that it became impossible to evacuate them without powerful drastics or mechanical means, to the great distress and danger of the patient.

WHAT THE DIET SHOULD CONSIST OF.

The diet should not be of dry food: vegetable diet is preferable. The use of fruits, such as prunes, figs, roasted apples, oranges, etc., is beneficial, except in those cases where they produce flatulence. Brown bread, oat-meal, porridge, and the use of olive-oil, in substance or as a condiment, are sometimes sufficient. A tumblerful of water before going to bed, or an orange before breakfast, has also produced good results.

Beware of cathartics! While some are simple enough, others, such as aloes, turpentine, and other irritating drastics, have caused abortion. Do not take a cathartic without the advice of a physician.

Diarrhœa is often the sequence of constipation. The hardened fæces, that have for a long time obstructed the proper action of the intestines, finally cause an irritation of the mucous membrane, that produces a watery diarrhœa, even without unloading the bowels. Nervous irritation, induced by pregnancy, is also often a cause, as well as colds, defect in dress, and improper diet. In severe cases the diarrhœa is induced by ulceration of the mucous membrane, caused by previous fecal accumulations, in which case the patient suffers from pain (a sensation of internal burning), the

pulse quickens, the tongue becomes dry, the skin hot, and the appetite is lost. Thirst and emaciation, followed by vomiting, may supervene, placing the patient in a very precarious condition.

In cases where the diarrhœa is alternated by passages of hard, lumpy stools, indicating a mechanical irritation above by indurated fæces, a teaspoonful of castor-oil may be sufficient to remove the cause and the disease.

The diet should be the reverse of that recommended for constipation. Avoid acid fruits and coarse food and vegetables; live principally on rare meats, beef-tea, rice, arrowroot, tapioca, etc.

Flatulence and colic I place in the same paragraph, because the former is, in a great majority of cases, the cause of the latter. Wind-colic, as it is vulgarly termed, can be excessively troublesome and distressing. I have known a case where it would awaken the patient regularly, between eleven and twelve o'clock at night, and put her, in ten or fifteen minutes, into such distress, that she would throw herself about in perfect agony, from the distention of the abdomen, and a pressure upon her lungs so that she could hardly breathe. On one occasion it threw her into a violent convulsion in fifteen minutes from her awakening.

USE OF DOMESTIC MEDICINES.

The diet should be of the most digestible kind, and food well masticated. Acid fruits and vegetables are apt to produce or increase it, particularly uncooked apples, cabbages, onions, beans, etc. Eat moderately, rather often and little at a time, than a full meal rarely. Eat nothing for three or four hours before going to bed.

Domestic medicines—such as peppermint, ginger, aniseed—are often useful in assisting to expel the gas. Sometimes a tumblerful of warm water, taken internally, has caused an easy vomiting, and with it the emission of an incredible quantity of wind. When the wind seems lower in the abdomen, or rolling about, an injection of warm water has caused a slight movement of the bowels, which afforded a chance for the gas to escape.

For diet and medical treatment, see paragraph on "Constipation."

Hemorrhoids, or piles, are a very common disease, attending pregnant women, and, in fact, all people of sedentary and constipated habits. Piles are an enlargement of the hemorrhoidal veins of the rectum, constituting small tumors from the size of a pea to the size of a walnut. When the

tumors are within the rectum, they are called bleeding or internal piles, which are the origin, sometimes, of profuse hemorrhage. Those without go by the name of external or blind piles, because they seldom bleed.

They are caused by pressure of the womb, or by distention of costive bowels, upon the veins of the rectum; preventing the return of the blood. The veins become varicose, and finally distend into separate and distinct tumors. These may be numerous, and may surround the whole circumference of the anus; closing it, and causing great pain and distress at each evacuation.

The bleeding or internal piles sometimes discharge blood at regular periodic intervals; again, they bleed so profusely as to prostrate the patient. These hemorrhages may be preceded by a sensation of weight and pain at the small of the back and loins, stinging and burning, swelling and fullness, with throbbing in the rectum.

TREATMENT FOR THE PILES.

When the piles protrude, they may become strangulated, causing severe suffering. In such cases they must be returned as soon as possible, which can easily be done by taking them within four fingers united in a cone, and gently and gradually squeezing, and pressing them within. Then the patient should lie down and endeavor to retain them. A pad of cotton cloth dipped in cold water, or even containing a small piece of ice, should be kept at the rectum. If the bowels are constipated, they should be moved by repeated enemas of warm water. In fact, the patient should not allow herself to have a costive movement at all. If there is much irritation and pain, it may be allayed by the application of a poultice of slippery-elm or marsh-mallow.

Daily enemas of cold water will cause contraction of the hemorrhoidal veins, and prevent the return of the piles. Walking or standing will aggravate them. The sitting on cane-bottomed chairs is beneficial; while the warmth of stuffed seats increases the liability to these troubles. When the case is bad, it should be attended by a skilful physician. The diet and regimen for Constipation holds good in Piles.

Of all neuralgias, toothache is the most common among pregnant women. It generally affects the lower jaw; sometimes on one side, sometimes on both. It commences during the first months of pregnancy, ceasing about the fourth or fifth month.

If a tooth is diseased from partial decay, or exposure of the nerve

from a cavity, a dentist should be consulted. Persons of nervous sensibility, or addicted to miscarriage, should not have teeth extracted during pregnancy; for the apprehension of pain, and the shock received in the extraction, have sometimes caused abortion.

Itching is often very distressing and very troublesome, not only to pregnant females, but to persons of all ages. It may be so severe as to deprive the sufferer of any sleep or rest. Sometimes it occurs without any appreciable cause; again, it is induced by the want of proper cleanliness. It may affect any part of the body; but, when it affects the private parts, it is perfectly intolerable. In pregnancy, it may be owing to some discharges from the vagina of an acrid nature: in this case, a daily washing of the vagina, even two or three times a day, with castile soap and water, is absolutely necessary. If that is not sufficient, a wash of borax, or an injection of ammoniated water (two tablespoonfuls of the aromatic spirit of ammonia in a tumblerful of water), may prove so.

WHAT OCCASIONS SHORTNESS OF BREATH.

Shortness of breath is a difficulty that is troublesome, but not dangerous; will occur particularly during the latter months of pregnancy, when the abdominal muscles are too distended to assist the muscles of the chest, and when the abdominal cavity is so filled as to give no extra room to the lungs for free expansion.

When it occurs in the beginning of pregnancy, it is generally a mere nervous sympathy with the womb; when it occurs in the middle of pregnancy, it may depend upon a plethoric state of the system, which should be attended to by the physician; and this is particularly the case, when, at every motion, the breath is impeded, or the heart palpitates.

Those liable to asthma should be able to distinguish the difference; for in that disease there is more or less mucus rattling in the chest at every expiration and inspiration. Moreover, the short breathing from pregnancy is always ameliorated by rest; while that from asthma is not.

Rest is important; the stomach should not be overloaded by hearty meals; eat often, and little at a time. Costiveness of the bowels should not be tolerated; for the patient wants all the interior room possible. The dress should be worn loose. Medicine is useless, of course, when short breathing is produced simply by the mechanical pressure of the enlarged fetal tumor during the last two months.

In the earlier stages of pregnancy, this trouble may be relieved by ipecac, a drop of the tincture every two or three hours.

Spitting of blood is very rare; still, when it occurs in connection with consumption, it is sufficiently formidable to send for a physician immediately. It may occur, however, independently of this, from a simple congestion, due to the suppression of the usual menses. In this case, it may appear at the time that the menses would be due, and would not be dangerous to the patient; on the contrary, it would relieve the congestion. Let the patient retire to bed, and assume a semi-reclined position; put a cold, wet bandage around the chest, cover it well with flannel, and, when it gets very warm, renew it.

Women, and particularly weakly ones, and those of nervous temperaments, are liable to palpitation of the heart, when in a state of pregnancy. The exciting causes are mental agitation, sudden starts, disordered stomach and bowels, errors in diet, and the motion of the child. The drinking of large quantities of coffee or green tea will also predispose the woman to palpitation.

LIABLE TO ATTACKS AT ANY TIME.

The attacks may come on while awake or while asleep, suddenly or gradually. When the heart beats violently, it produces a queer choking sensation in the throat, and makes one feel almost sick at the stomach: the cold perspiration may sometimes be felt all over. The excessive beating may even shake the body. The action of the heart at such times is generally regular, although excessive, and rarely intermits. Giddiness, dimness of vision, heat and pressure in the head, stupefaction, may accompany an attack.

This will soon subside if the patient takes a recumbent position. Smelling salts of ammonia, or taking a teaspoonful of brandy or whiskey, is useful. Although extremely distressing, palpitation of the heart is hardly ever dangerous. The cause should be inquired into. If induced by indigestion, flatulency, sour stomach, etc., the diet should be attended to; so with the bowels, if constipation is present. So much has been said already about the diet in constipation and indigestion, under their respective heads, that it is useless to repeat.

Fainting is not an unusual occurrence among women during the first month of pregnancy. Many females take it as a sign of pregnancy, even before the suppression of the menses. At the period of quickening, how-

ever, it is quite common; probably owing to a sympathetic nervous irritation from the movements of the child. A cause of fainting, during pregnancy, is tight dressing, and oppressive, confined air. It is common to see women leave theatres and churches in a fainting condition. Nervous and delicate females are easily overtaken by fainting.

It is generally a disorder that should create no alarm, unless it is connected with disease of the heart; in which case, it is sufficiently serious to call in medical assistance. During the later months of pregnancy, it is regarded with some apprehension, on account of unpleasant anticipations after delivery. During pregnancy, it is apt to frighten the attendants; but the alarm is groundless, as it will not interfere with the process of parturition, nor expose the patient to any danger.

DANGERS CONNECTED WITH FAINTING.

Fainting may be regarded with suspicion immediately after delivery, if there is hemorrhage, or the discharges are entirely stopped. In that case, the cavity of the uterus should be examined, lest a clot of blood hides an internal hemorrhage. In this case, however, the fainting is prolonged, the face is ashy pale, the lips bluish, there is a fulness in the abdomen, attended by a sensation of weight.

The first thing to be done in fainting is to lay the patient flat on the bed, with the head even with the body; loosen the dresses around the chest; allow plenty of air; sprinkle cold water on the face; and, if at hand, apply to the nostrils salts of ammonia or camphor, cologne, vinegar, etc. This is generally sufficient to restore the patient. If, after fainting, there is a great sensation of weakness, a little wine, brandy, or whiskey may be administered.

Vomiting may occur in recovering from faintness; do not interfere, it relieves. If the patient falls asleep soon after, let her alone: she will awaken much refreshed.

From the fifth to the eighth month, from sympathy and when the pressure of the extended womb reaches the region of the liver, a fulness and a state of congestion may occur which induce a deep-seated pain or aching on the right side, aggravated by motion, by coughing, or the taking of a long breath; it may be accompanied by a sensation of heat, and of a dull, heavy weight in the part affected.

At such times, exercise should be very moderate. The application of a mustard-poultice is useful when the pain is acute. A cold, wet band-

age, put on when retiring, and well covered with flannel, will sometimes relieve this pain entirely. If the pain is connected with inflammation of the liver, which would be detected by the presence of fever, chilliness, and yellowish-coated tongue, a physician should be consulted.

Next to disturbance of the stomach, headache is considered the most common complaint of pregnant women; and we are safe in saying the most common complaint amongst men, women and children. Marcy, Hunt, Pulte, and others have treated this subject so thoroughly in their works, that I shall cull from them very deliberately, and without limit. In taking this liberty, I hope I give them the credit they deserve.

Congestive headache comes from determination of blood to the head; and persons who make use of spirituous liquors, who lead a sedentary and studious life, who indulge freely at the table; persons of much mental application, of sanguine nervous temperament,—are addicted to it.

SYMPTOMS OF CONGESTIVE HEADACHE.

The symptoms are: great throbbing of the arteries, pressure in the head, giddiness in stooping; head aches mostly over the eyes; the eyes feel big and painful, they cannot bear the light; the face is flushed; great heat in the head, particularly on the top; motion aggravates the symptoms, the brain feels as if it would fall out; cold feels grateful.

It may be brought on by mental excitement, mental labor, close application, errors in diet, exposure to cold, fatigue, suppression of the menses, etc.

Apply cloths wet in cold water, and renew them as soon as they get warm; hot bricks to the feet, particularly if they are cold; in severe cases, a mustard-poultice to the back of the neck. Vomiting relieves.

A distressing form of the malady, occurring most frequently in literary or professional men, and in delicate but intellectual females. It occurs most frequently in persons between the age of puberty and forty or fifty years. Some are peculiarly subject to it for a long series of years; and many, though temporarily relieved by various modes of treatment, are never permanently cured.—Marcy & Hunt.

It is common for sick-headache to commence in the morning, on waking from a deep, unrefreshing sleep, after previous fatigue, mental excitement, or irregularity of diet. There is "disturbance of vision; dull and distressingly oppressive pain of the head, centering in one temple, most frequently the left; tenderness and fulness of the eye of the same

side, extending across the forehead, and sometimes fixing itself over the inner corner of the eyebrow; painful sensibility to light; clammy and unpleasant taste in the mouth; chilliness of the skin; cold and moist hands and feet; pulse feeble; face pale."—Wright.

"After the pain in the head and about the eye has become severe, sickness at the stomach begins, and is increased by every movement, especially raising up; flatulence; retching; shuddering, and vomiting of the contents of the stomach, or of a thin, glairy fluid of an acrid, sour taste. Some of these attacks last six or twelve hours; again, one, two, or three days."—Marcy & Hunt.

"It is distinguished from neuralgia by the predominance of the gastric symptoms. It has none of the strict periodicity which belongs to the intermittent neuralgic disease of the head and eye."—Hartmann. It is distinguished from dyspeptic headache, by being more severe.

HOW SLEEPLESSNESS IS CAUSED.

Pregnant women of nervous temperament are often kept awake night after night without apparent cause. This is produced by the slightest mental excitement, or by the motions of the child; again, by eating, or indulging in a cup of tea or coffee before retiring. Close confinement to one's room, and want of exercise, may also be the cause. This may be borne without inconvenience, provided the patient gets some few hours of sleep in the morning, and awakes refreshed. But, in some instances, the patient suffers severely; does not sleep a minute; becomes feverish, restless, and agitated; she losses her appetite, and becomes weak and prostrated; her mind begins now to suffer; and she becomes fretful, whimsical, and even irrational.

The principal causes of this distressing disorder being pointed out, it will not be difficult for the patient to obviate them.

Although physiologists have divided abortions, or miscarriages, into classes, according to the period of pregnancy, for the sake of theoretical speculation, there is but one to the woman bearing child. The loss of the fœtus (child) before its full time is to be called abortion, miscarriage, premature birth, or any other name chosen to designate that loss. It involves the same fact, the same risk, morally and physically. Classification may be of use to a physician; but it has no import to the woman, except to deceive her. From the moment she conceives, she is mother to the creature, and contracts towards it all the moral duties

which devolve upon her during any period of its life within or without the womb.

The general condition of the mother necessarily increases or decreases liability to abortion. Plethoric women addicted to profuse menstruations; very impressible, nervous women, greatly excited by passion or mental disturbances; women of sedentary habits, or those who indulge immoderately in the pleasures of society, dancing, late hours, tight lacing; women occupied at the sewing machine, or who carry weights to strain their back, or who expose themselves to heated stoves in the kitchen,—are constantly exposed to this mishap.

Acute diseases, particularly small-pox; inflammation of the bowels; syphilis; Asiatic cholera; severe constipation; hemorrhage; diseases of the womb and ovaries; inflammation of the bladder, vagina, and rectum, —are all predisposing causes. In periodical and habitual abortion, the cause may almost always be traced to some abnormality of the womb.

SIGNS OF THE DEATH OF THE FŒTUS.

Death of the fœtus is inevitably followed by abortion. The mother may transmit disease to the fœtus. Children have been born with the small-pox, with intermittent or with yellow fever, after the mother had for some time recovered from it. An army officer and his wife had the yellow fever in Texas; the husband died of it; the wife recovered. She returned to Washington, and, after a few weeks, gave birth to an infant, apparently healthy. Six weeks after, as the child gave signs of restlessness, the mother got up to comfort it; when, to her greatest horror, she recognized in the vomited ingesta of the child the fatal symptoms of yellow-fever. In twelve hours, the baby was dead. So, also, disease and death may take place in the child before it is born.

The signs of the death of the fœtus are: cessation of motion after quickening (this sign is an unsafe one to rely upon, however; for the motion may have become so slight as to be imperceptible to the mother); the abdomen collapses; the breasts shrink; the woman experiences a sensation of weight in the loins, which may change locality in moving to different positions; and a pressure in the lower part of the abdomen.

As a general rule, the retention of a dead infant, even for some time, does not produce disastrous results to the mother. In time, it passes off; and if pregnancy is advanced, the breasts may swell with milk; but they soon subside, and the regular order of health becomes re-established.

A leap from a carriage, running down stairs, missing a step, falls, excessive fatigue, too frequent coition, severe contusions, may produce miscarriage. A blow on the abdomen may cause injury and death to the fœtus. The severe jar or jolting of a carriage, a sudden fright, a fit of violent passion, have often produced abortion.

Of the classifications of abortion, the consideration of miscarriage and premature birth is the only one that may be of use to the mother. Miscarriage is the term used for abortion of a child before the seventh month; because it is not viable (that is, liable to live): after that period, abortion is called premature birth; because the development of the child is such, that it can live out of its mother's womb.

Miscarriages happen oftener at the third month of pregnancy; but they occur often enough before and after. It is believed that at the third month it can occur with less danger to the mother; still physicians know that the danger increases with the advancement of pregnancy. It is also said that the infant is more likely to live if born at the seventh than at the eighth month, although there is no physiological reason for it.

PERIODICAL HABITS OF THE WOMB.

The womb is an organ of such periodical habits, that, when miscarriage has happened once, it is apt to occur again, and at the same period of pregnancy.

The writer has attended a lady during seven miscarriages; each of which occurred, in spite of care and treatment, on the accomplishment of the third month, to the very day. The patient was hardly over one miscarriage before she became pregnant again; thus depriving the womb of the rest and time necessary to recover from debility, and to enable it to carry its burdens for a much longer period. This fact illustrates the importance, for a woman addicted to miscarriage, of taking particular care of herself, and avoiding any exciting cause that may tend to disturb her womb at such periods; for, if she goes beyond the limit of that time, she will probably be able to bear a child to its full term.

The best mode to avert this periodical liability is for the woman to remain on her back for two weeks before, and two weeks after, such period.

Having given the causes of abortion, it is useless to suggest the means to avert it. Common sense would lead the woman to avoid what would endanger the life of her infant and her own life. For causes over which the woman has no control, she should consult her physician.

When a woman has been subject to abortions, it is indispensable that she should not become pregnant for a year or two in order to give time to the womb to recover from its weakness. Moderation in everything should be her effort, to attain the dearest object of her life. There are premonitory, and actual, symptoms of abortion. The premonitory symptoms, which may occur several days before the actual symptoms set in, are: alternate sensations of chilliness and heat, nausea, thirst, lassitude, palpitations, cold extremities, pallor, depression of spirit; the eyes look heavy and dull; sensation of sinking at the stomach; of weight near the anus and vagina; pain in the loins; ineffectual desire to pass water; the breasts become soft and flaccid.

These symptoms may occur singly or collectively, without indicating abortion; yet, when a woman has had miscarriages before, she should not disregard these warnings.

WHAT HAPPENS IN CHILD-BIRTH.

The actual symptoms are, regular periodic pains with chills; pains that start from the back, and run down the loins and the lower part of the abdomen; pains that cause contraction of the womb, and bearing down. During each pain, the abdomen grows hard under the hand, and relaxes after the pain is gone; a watery or bloody discharge exudes from the vagina, which is an indication that the membranes are detaching themselves from the womb.

When such symptoms occur, and when blood, however little, discharges from the vagina, even without any other symptoms, it is imperative that the patient should confine herself to her bed, and maintain the most undisturbed quietude, morally and physically. A sudden vaginal flow of blood after a fall, a jar, a blow, or a shock to the nervous system, should be regarded as perilous in the extreme; and the physician should be summoned without a moment's delay.

Abortion is really inevitable only when the fœtus has ceased to live, or when the separation of the after birth and membranes is so complete as to cut off all nourishment from the child. There are many instances recorded where the pains and bloody discharges seemed to make abortion inevitable; yet those symptoms ceased, and the child went to its full term, and was born healthy and strong.

Many of those symptoms may occur from diseases independent of pregnancy. Colic, diarrhœa, dysentery, will produce pains like labor-

pains. Blood may ooze out of an ulcer located in the mouth of the womb; watery discharge may occur in certain forms of dropsies, etc.

It has already been said that the danger increases as pregnancy advances. If the fœtus and after-birth have been expelled with but little hemorrhage at or after the occurrence, the mother may recover without any danger to herself; but, if some portions of the fœtus or after-birth are retained, they may either cause inflammation of the uterus, or pass off shortly afterwards in a putrified solution, unattended with any disturbance of the system, or go to the end of the term of pregnancy before being expelled.

In criminal abortion, however, when violent mechanical or medicinal means have been used to produce miscarriage, the injuries to the womb may be of such a nature as to produce inflammation, fever, and death. This we shall consider more at length hereafter.

REMEDIES FOR THREATENED ABORTION.

In any and every case of threatened abortion, perfect rest and reclined position are absolutely necessary, sometimes for days, sometimes for months. The mind of the patient should be composed, and all interference on the part of the nurse or friends excluded. Let her lie in a horizontal but easy position, on a spring or hair mattress, if possible. If she is inclined to "flood," give her cold drinks, iced lemonade, iced tea; let her not move body or limbs. Give no stimulating or hot drinks. The coverings should be light and sufficient. The room, the house, in fact, should be quiet; no hammering or stamping allowed. No good or bad news should be brought to her that could cause her a shock. Cheer her mind with hope.

Society has established the custom, for the love of order and the good of all, that, in certain instances, it is dishonor for woman to bear a child. It is grievous that there is not more charity among men, particularly as they are all liable to err; it is grievous that woman, the more unfortunate of the two sexes, should have to bear the whole brunt of her neighbor's scorn; and it is grievous that woman should be the least inclined to extend the hand of sympathy to her fallen sister. These grievous wrongs give the strongest excuses that can be offered for daring to slay the unborn child. Still, the laws of God and the laws of man are explicit against the inducement of abortion; and the duty of the physician is to save, not to kill.

Poverty, widowhood, desertion, nor any thing, in fact, is a reason to justify the avoidance of those laws. Charity is a godly gift, and should be practiced by frail humanity; but sympathy has nothing to do with the violation of law. Towards God, enforced abortion is a sin; towards mankind, it is a crime.

All civilized nations have recognized the true nature of this crime, and have promulgated laws to bring the perpetrators to severe punishment. In some countries, and even in some of our States, they make the unwarrantable fetal distinction of quick, and not quick; in others, they make no such unphysiological distinction, and punish the mother not only, but all those who directly or indirectly connive at and abet the attempt or accomplishment of the act. The wife, the husband, the doctor, the apothecary, the nurse, are liable to imprisonment and fine, if accessory to abortion.

In Scotland, if a person gives a potion to produce abortion, and the woman dies in consequence, it is murder. In Austria, the perpetrator of this crime is punishable by imprisonment not less than fifteen, nor more than thirty years; and is subject to be condemned to hard labor on the public works. When the father is an accessory, his punishment is greater.

In this country, our legislatures are not behind the most civilized countries. Although they differ in the construction of their statutes against abortion, they all acknowledge the crime, and have promulgated laws for the punishment of direct and indirect offenders.

The legislatures of the various States, however, should revise their statutes in regard to this crime, and insert the following recommendation of The Suffolk District Medical Society of Massachusetts:—

"Whoever, with intent to cause and procure the miscarriage of a woman, shall sell, give, or administer to her, prescribe for her, or advise or direct or cause or procure her to take, any medicine or drugs or substance whatever, with the like intent, unless the same shall have been necessary to preserve the life of such a woman or of her unborn child, and shall have been so pronounced (in consultation) by two competent physicians; and any person, with the like intent, knowingly aiding and assisting such offender or offenders,—shall be guilty of felony, etc.: and if such offence shall have been committed by a physician or surgeon, or person claiming to be such, or by a midwife, nurse, or druggist, such punishment may be increased at the discretion of the court."

LABOR:
Its Proper Treatment.

CHAPTER XV.

A WOMAN with child would find it greatly to her advantage, and conducive to her health and happiness, to employ her leisure hours in the preparation of the necessary articles of clothing for herself and her coming baby. As many seem really ignorant of what is necessary, I name some few of the articles which she will absolutely need. These will naturally suggest others to women accustomed to the convenience of plentiful supplies.

Articles needed by the mother are: Six cotton chemises, six cotton night-dresses, short night dresses are preferable; six unbleached cotton bandages, one yard and a half long; two flannel shirts, one flannel dressing-gown, to wear on getting up; three dozen napkins; these may be made from old table damask, rendered soft by use; one dozen common face-towels.

Articles needed by the child are: Eight belly-bands of infants' flannel; four of them one quarter of a yard wide and five-eighths long, and the other four not quite so wide, for earlier use; four dozen diapers; four flannel barricoats with muslin bodies, left open like an apron; one dozen linen-cambric shirts, to be worn over the belly band; six muslin night slips, one yard long; two flannel skirts, of two breadths each; six pairs knit socks; two blankets of fine flannel or merino, one yard square, bound with ribbon, for a shawl. One baby-basket, containing: a box of rice-flour powder; one powder-puff; one cake of old, white Castile soap; pieces of old handkerchiefs, to be used in dressing the naval; one box of cold-cream; one fine sponge; one paper of large, one of small pins; one pair of sharp, round-pointed scissors. A complete suit of baby clothes should be in it at the time needed.

Strange as it may appear, it is often the case, that, while attending a

woman in labor, the physician finds no provision of the most necessary articles, creating a delay and confusion. Some women are so indolent, that they put off these preparations until the time overtakes them quite unprepared.

Among the lower classes of women in Italy, it is customary to raise a chicken for the mother, and save money for the doctor's fee. A most philosophical plan! Nine months will make a good chicken, that will yield rich broth for a debilitated parturient. The doctor's fee is quite as necessary for him. In this country, a great deal of unnecessary flummery is often gotten up for the child, very often forgetting the chicken, and the physician's need.

By the term monthly nurse is meant a woman experienced in attending confinements, and capable of assuming the care of a baby, and of the parturient, for a month from the commencement of labor.

A MONTHLY NURSE.

In some countries these nurses are educated for the purpose, and are even capable of exercising all the duties belonging to a midwife. In this country it is not so. Women actually prefer a male accoucheur to a female. They feel safer in his hands; they rely not only on his superior knowledge, but upon his courage. They feel he would not flinch before duty, and would assume the greatest responsibility to save life. It is not generally so with female accoucheurs, allowing very honorable exceptions. I know of many cases where the female accoucheur, getting frightened, deserted her patient at the moment she was most needed; thus sacrificing a life that might otherwise have been saved.

But I am speaking of a monthly nurse. She should be intelligent, and have experience; yet she should not be presumptive, and should never be allowed to exercise duties not within her province.

A nurse is necessarily a servant; and I, for my part, never want her to be anything else. I want her to have intelligence enough to carry out my orders, and no more. Has she learnt anything from other physicians or other people; let her keep that knowledge to herself as long as there is a physician attending who is responsible for the case.

The monthly nurse should be a judicious, unobtrusive, well-tempered woman. She should know the care the patient needs; she should administer to her comfort, but not attempt to entertain her with stories or gossips of any kind; she should carry out the wishes of the physician

conscientiously, but never remonstrate on her own account, with the patient; she should acquaint the physician with every irregularity without exaggeration, and never undertake, under the assumption that it will do no harm, to administer favorite lotions or potions to the patient or to the child.

In the house, she should not be a source of trouble. I have known nurses to demand so much attention from the house-servants as to be unbearable. Some nurses assume rights and authority over the patient and the husband. Take my advice: such a woman, being a nuisance, should be paid and sent off.

If the parturient is worried by the nurse, she should inform her physician without delay. I have known patients that were so intimidated by the nurse as to be afraid to mention this fact to physician or husband, and would, consequently, go from day to day, sick without an appreciable cause.

PROTEST FROM THE HUSBAND.

In this case, let the husband take the matter in his own hands, and let him protest against such conduct; if this be vain, let him invite the woman out of the sick-room and deliberately inform her that she must leave the house. Having gone thus far, she should not, under any pretext whatsoever, be allowed to enter that room before leaving; for, with truly revengeful spirit, she may make a scene that will greatly affect the condition of the wife. It may be thought that I concern myself entirely too much about these nurses. Not so. Any one who has had experience with them will tell you that every young mother or husband needs all these cautions.

Nurses have their favorite doctors; and those are they who employ them the oftenest. When they are engaged where their favorite is not in attendance, they are sometimes given to talking disparagingly of the one who has the case in hand, and praising others; they have even been known to improvise facts and stories that bear against his character, or his skill as a physician. When this is the case, do not hesitate to silence them at once, and then watch them closely; for, to prove themselves right, they are possibly capable of injuring you or your child. If the nurse feeds the child by hand, see that she puts no powder in the milk, although she may tell you it is only a little soda, to prevent flatulence.

The room should be a spacious and well-ventilated one. If possible,

it should have a southern exposure. Let it be remote from the noise of the street or the house. If there is a bath or dressing room attached to it, so much the better. Keep no soiled clothes in it during sickness. One bed, one washstand, wardrobe, bureau, and two or three chairs, is all the furniture needed; any more would be in the way, unless the room is unusually large.

The bed should be a double one, in good order, on castors. The spring mattress is the best; hair and cotton come next. Feather-mattresses are inconvenient, too warm, and should be avoided. The sheets should be of cotton, unless it is in the midst of summer, or in a hot climate. During labor, the patient should lie on the right side of the bed. This position will place the patient on the right side of the physician. Attention to this will prevent a change of side when the physician arrives.

HOW TO PREPARE THE BED.

For labor, the bed should be prepared as follows: Fold the lower sheet so that it will not come below the waist of the patient, with the end toward the hips, so that it can be grasped and pulled down after delivery.

Cover the mattress, from the waist down, with an impervious material,—a piece of India-rubber or oil-cloth. Over it place a thick cover—a blanket or sheet folded several times—to absorb the discharges. Replace the bed-covers as though the bed had been made up as ordinarily. To the foot-board—against which the feet should be fixed during expulsive pains—attach a long towel, twisted, that the patient may grasp it during strong bearing-down pains.

Accommodations for the physician consist of a chair to sit upon, some lard or sweet-oil to lubricate his hands and the soft parts of the mother, several towels, cold and warm water, and soap.

Articles needed during labor consist of a cord made of twisted linen thread; a pair of sharp-edged but blunt-ended scissors; a paper of large, sharp-pointed pins; a square yard of soft flannel, or some suitable material, to envelop the child when born; a bandage for the mother; an abundant supply of warm water; some suitable stimulant, as camphor, cologne, or aromatic spirits of ammonia; one dozen towels and napkins; a fine sponge; a vessel under the bed to receive the after-birth.

Although some physicians split hairs about the bandage, and some assume even that the patient can do better without it, I cannot but recom-

mend the use of it. The bracing up of the collapsed abdomen gives such a feeling of comfort, that that alone would recommend it, as, in ordinary cases, enabling the mother to move about the bed without feeling that she is going to fall to pieces. Besides, I know cases where the abdomen never contracted, from want of this support; and the woman had to bear a pendulous abdomen ever after, to her great discomfort and annoyance. And I never knew or heard of an instance where the bandage, properly applied, had caused unpleasant or dangerous results. Of course, as in all things in this world, there is a way to do it right, another to do it wrong: even a feather, in the hands of an ignoramous may prove a fatal weapon. If the bandage be put on snugly, with no undue pressure exerted, so as to obstruct the circulation, none of the far-fetched maladies will result from the application.

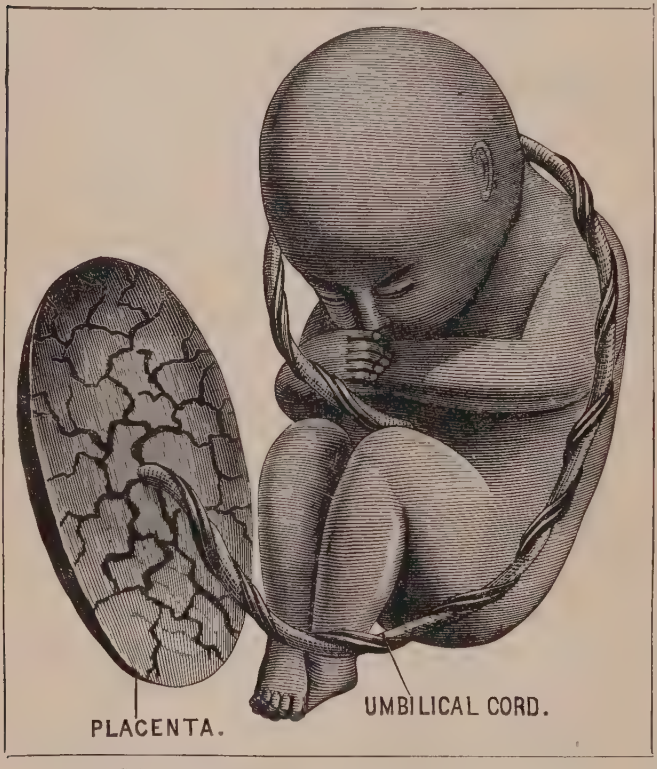
A great deal is said about the shape of a bandage. For my part, a towel long enough to go around the body I have always found to answer every purpose; some, however, prefer to have it so shaped as to fit the curves of the body. It should be wide enough, at all events, to cover the whole abdomen.

NOTIFYING THE PHYSICIAN AND NURSE.

When to send for physician and nurse requires some judgment; for it is very hard on a physician, fatigued by a severe day's labor, to be suddenly awakened from his sleep, and requested to relinquish his rest and go to a patient, only to find that it is all a false alarm. I speak feelingly on this subject. Physicians appreciate the anxieties of a woman, who, being conscious that her term is near completion, feels pains flitting about her abdomen; and they are willing to go to her, were it only to calm her apprehensions: still, some consideration is also expected on her part. He, like other mortals, has only one life to live, the preservation of which requires the same rest and the same peace that others enjoy.

On the completion of her eighth month, the woman is liable to be overtaken by pains simulating labor. These pains are probably caused by the womb's attempt to adapt itself to its enlarged condition and position. A few hours of complete rest will often make these pains disappear without further trouble. When a woman, however, has reached her full term, she may suddenly awake one night to find herself in labor. Still, let her remember that labor is very rarely an instantaneous process. There are preparing pains, and many are they, before the actual presence of the physician is necessary.

Pains coming at regular intervals, commencing in the back, and running down the loins, causing the womb to harden under the hand, and to relax after the pain is gone, should be considered labor-pains. When these pains are accompanied by a serious bloody discharge, there can be no doubt that labor has commenced. As long as the pains do not return oftener than every fifteen minutes, the physician need not be summoned, if it is night. The nurse should be sent for, however, without delay. When the intervals are gradually getting shorter, until they are no longer than five minutes apart, the physician should be summoned. The physician's attendance should also be immediately required after the breaking of the bag of waters. This may happen suddenly, without giving any premonitory symptoms.



THE CHILD, PLACENTA AND UMBILICAL CORD. AFTER AFTERBIRTH.

When the symptoms of labor occur during the day, the physician should be informed of the fact without delay; for he may find it convenient to call, and ascertain for himself the condition of things. If early in the morning, let him know it before he leaves his office, lest he cannot be found when he is wanted later in the day. A sudden gush of blood, or a continuous stream of it, should warn the patient, or the attendants, to have the physician instantly, and, if the regular family attendant is not to be found, the nearest doctor should be brought to the spot. In case the stream of blood is continuous and alarming, fill up the vagina with a sponge, and keep the patient quiet on her back until the physician arrives.

Labor is the inevitable and physiological consequence of pregnancy.

It is a process of pain and suffering. It is a process that requires all the moral courage and fortitude a woman is capable of. The woman who bears a child to her husband performs an act which his lifelong love and kindness could not repay. The woman who bears a child to the State gives the legislator to mould the nation, the general to defend her honor, the admiral to span the oceans. The woman who bears a child to her God is an imitator of His creation, and will glory in the light of His love.

Woman is the re-creator and the nurse of mankind. Her sufferings in giving birth to her offspring, her self-abnegation in raising and educating it, commands man's respect, his admiration, his love, his gratitude. Beautiful in love, sympathetic in sorrow, she governs his affections, and assuages his pains.

In the throes of labor, she is heroical. On the life of her infant, she sheds tears of joy. In the tenderness of a newly-made mother, she forgets her pains. Her lips whisper thanks to her God; her eyes look with a triumphant joy upon her husband. No wonder man loves his mother! If a mother never did anything but give birth to her son, he should love her and be grateful to her forever.

THE TWO STAGES OF LABOR.

During the last fortnight of pregnancy, the abdominal tumor subsides, so that pressure is taken off from the lungs, heart, and stomach, and the woman feels more buoyant, freer, and more comfortable. The pressure, however, is brought downwards by the descent of the womb, causing, often, a desire to void urine, and sometimes, even with an inability of doing so.

Labor may be divided into two stages: the first constituting the process of dilatation of the mouth of the womb; the second, the process of expulsion of the child from the interior of the mother.

During the first stage, the parts become humid: a discharge of watery blood, "the show," occurs; intermittent, regular, and periodical pains come on, each ushered in by shiverings. This stage of preparation occupies five-sixths of the duration of labor. The fibres of the womb contract, and its mouth dilates, at every pain.

During this stage, it is evident that there is nothing to be done but to patiently wait. The mother should make no expulsive efforts: on the contrary, she should save her strength for the second stage, when the child escapes from the womb, and is pressing hard against the soft parts.

She may walk the room or sit in a chair alternately: the first will assist in the expansion of the mouth of the womb by the pressure of the weight against it; the second will shorten her confined position in bed, which may become very tiresome if the labor is slow. The patient should know, that, during this stage, there is no accident to apprehend; her mind should be at ease and hopeful.

During these contracting pains, she may become nauseated, and may even vomit. This condition is considered favorable, because it relaxes the system. She need not have any fear or anxiety if this stage is rather long; for it may depend upon the rigidity of the mouth of the uterus, which will yield in proper time. Anxiety will only tend to diminish the force of her pains, and render labor longer and more tedious. She should dispel every imaginary dread that she will not get through; for nine hundred and ninety pregnant women in a thousand have suffered like herself, and have gone to the end with perfect safety to themselves and their offspring.

MEDICAL TREATMENT NECESSARY.

She should not resist any inclination to move her bowels, or to pass urine: on the contrary, she should encourage both, as the discharges will give her relief, and make the exit of the child easier. It has even been customary to have the bowels moved by a cathartic, and in case the patient should be in the least constipated, I do not deem it objectionable in the least.

During this stage, if her physician is not present, she should be examined now and then by the nurse, in order to know the progress made in the dilatation of the mouth of the womb. If, after every five or six pains, no progress is detected, there should be no hurry in summoning the physician. When, however, the mouth of the womb is so expanded as to be of the size of a silver dollar, the physician should be present.

To make an examination, place the patient on her left side with knees drawn up. The nurse lubricates with oil or lard the index finger of her right hand, introduces it into the vagina, running it upwards and backward in the direction of the spine. When she reaches the tumor, let her feel for an opening in the membrane that covers the child. If she is in doubt whether her finger is then in the mouth of the womb, let her keep it within until a pain comes on, and, if the finger is within the

womb, she will feel the mouth contract around it like the string of a purse. She can then detect the size of the opening. When the womb is relaxed, she may confound the thin mouth of the womb with folds of the vagina, but not so when it is in a state of contraction.

The mouth of the womb is sometimes difficult to find, because it lies backward, and high up.

The examiner should not be satisfied until it has been found, and its dimension fairly measured. Care should be taken, during these examinations, not to press too hard against the tumor, lest the bag of waters should be broken. The waters, enclosed in an elastic bag around the head of the child, assist in expanding the mouth of the womb. This bag of waters generally breaks spontaneously during a violent pain. When it breaks in the beginning, it constitutes what is called "dry labor," which may last longer on account of the absence of the assistance spoken of. It usually breaks in the second stage, although it may do so at any time, particularly if the pains are strong, and the membrane weak.

The mother should be made acquainted with the existence and the necessary bursting of this bag, lest she should be frightened at a sudden and unexpected gush of so much water.

COMPANY TO BE EXCLUDED.

Admit no one to the room except the nurse or a female friend requested by herself. Under no circumstance, permit idle curiosity to peer into that room. Keep out officious women whose services are not needed. Stop every conversation regarding hard labors, or accidents happened to other parturients. This is imperative. Physicians know, to their regret, how many labors have been kept lingering by the influence of these mischievous conversations on the mind of the patient.

The husband should bear himself manfully; and, in his expressions of love and sympathy, he should not show that he is harrowed by a feeling of anxiety and the fear that the case may not terminate well.

Before the commencement of the second stage, the patient's dress should be so adjusted that it need not be soiled. Her chemise should be folded up around her waist, and the bandage to be used after delivery pinned around it. This will secure the chemise, and, at the same time, leave the bandage ready to be brought down, without moving the patient after delivery. Below this may be put a flannel skirt, or a small sheet folded, which will cover the patient, and protect the clothing above.

This simple precaution will prevent the necessity of changing her linen after delivery; a process which may be dangerous, in proportion to the condition of the patient.

The mouth of the womb having dilated during the first stage, and the child being now bearing down upon the soft parts of the mother, the patient has a strong desire to make expulsive efforts. This should now be encouraged. When she feels a pain coming on, she should draw a long inspiration, and then, holding her breath, bear down with all her strength. Restrain her from making exclamations during the pains, and urge her not to relinquish the downward pressure she ought to exert. If she complains of her back, press gently with your hand against it.

During these pains, she may become very much excited and even talk incoherently. Re-assure her, by telling her that she is now near the end of her troubles. Encourage her to rest between her pains, and maintain her position on her left side. Place a pillow between her knees, which should be bent, and let her feet press against the foot-board.

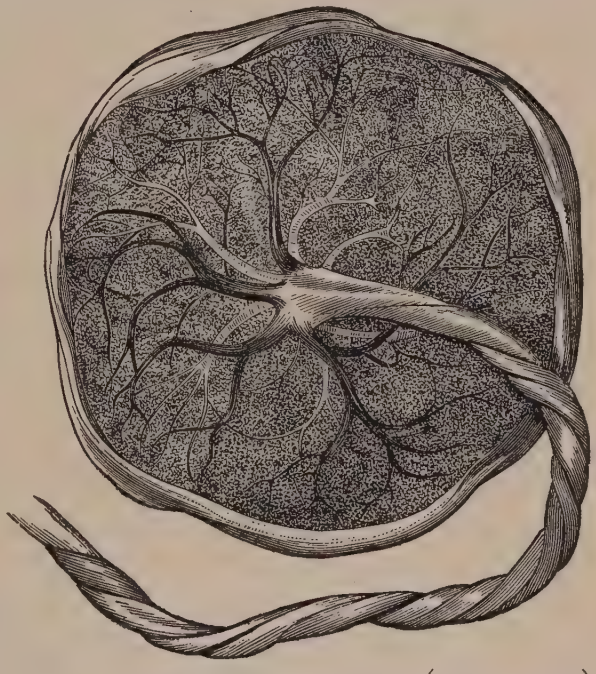
DIRECTIONS TO BE OBSERVED.

Take a napkin, and press gently between the vagina and the rectum during the pains; not enough, however, to prevent the descent of the child, but to prevent a possible rupture of the soft parts. If her exertions cause her to perspire, dry her face with a handkerchief, or fan her a little; if she is faint, give her volatile-salts or cologne to smell. Should the pains subside, and become weaker during this stage, give her a cup of hot tea.

This stage, sometimes, is very short. Many instances have occurred in my practice, particularly amongst healthy and strong women, where it consisted of one pain, prolonged until the child was expelled. With some women, it requires several pains, particularly when the parts are rigid. Encourage patience. In cases where the infant's head is very large, or the outlet of the mother rather narrow, the head is to be moulded, as it were, to the proper proportions, and the resistance will cause some delay.

It is during these pains, that she should pull at a towel fixed to the bed or in the hands of an attendant. The patient should not be discouraged if several severe pains, at this stage, do not cause the child to be born. As long as the presentation is right she need have no fear for the result, even if no physician be present.

When labor has really commenced, the most important point to ascertain is the presentation. The term "presentation" refers to the part of the child that presents itself to the mouth of the womb. Physicians divide presentation into classes, and the classes into positions, until they have reached a rather confusing number. For the practical purpose of an unprofessional attendant, four only are important,—head, foot, breech, and hand presentation; the first three constituting natural presentations, from the fact that they do not offer difficulties, and the latter, preternatural, because it offers serious difficulties to labor.



FŒTAL SURFACE OF THE PLACENTA (AFTERBIRTH.)

The presentation can easily be detected by introducing the index finger into the vagina as far as the womb, when, if the head presents itself, a hard, round tumor will be felt within the mouth of the womb. This presentation may be confounded with the breech, for that also is round, and almost of the same diameter; but in the latter, there is a feeling of elasticity, given by the fleshy buttock, that cannot be mistaken. Besides, by thrusting the finger a little higher, and feeling carefully around, the protrusions of the vertebræ of the spine, or the division of the limbs and the genital organs, can be discovered.

How and when to cut the cord. Having your string and scissors at hand, as soon as the cord ceases pulsating, tie a cord about it, an inch and a half from the naval; then put another ligature two inches from that, and cut between them. Then take a soft napkin, and wrap it around the child, so that, in its slimy condition, it may not slip from the hands; and place it in a smooth blanket in a safe place.

Sometimes the womb, being rid of the greatest part of its contents, remains inactive, and suffers the placenta (after birth) to remain for a

time. In this case, gentle frictions should be made on the abdomen, and the womb gently pressed, so as to excite contractions. Should you, by accident, separate the cord from the placenta, and after waiting twenty or thirty minutes, during which several pains may occur, the placenta not being passed out, introduce your hand, formed in conical shape, into the vagina, hook your fingers in the spongy placenta, and gently pull it out.

If the child gives a hearty cry, you may be sure it is all right. If it is evidently breathing at all, as the vast majority of new-born infants are, there is no further serious trouble to be looked for on that score; but if it remains still, and gives no sign of life, it will require immediate attention. Some authors recommend not to cut the cord until respiration is fairly established. But this connection should exist only as long as the cord is pulsating: when that ceases, the cord should be cut, lest the placenta act like an instrument of suction, and withdraws blood from the child.

WHY THE CHILD SOMETIMES DOES NOT BREATHE.

The unbreathing condition of the child may be caused by mucus filling its mouth: care should be taken, therefore, to clear it as soon as born, by wiping the mouth with a finger wrapped in the corner of a soft handkerchief. Then sprinkle cold water on its face and body: the shock thus given may awaken the dormant vitality. Should this be not sufficient, alternate the sprinkling of cold water with immersion in warm water. This alternate of heat and cold may be repeated several times. Should this not succeed, take a towel wet in cold water, and with a corner of it strike the child vigorously on the chest, back and head.

Do not give up in discouragement, even if the child does not breathe for half an hour. There are instances in which children have been brought to life after an inconceivable length of time, and after many attempts to make them breathe.

Immediately after delivery, the patient, passing from a state of tension to a state of relaxation, is often taken by a nervous chill: so do not expose her surface to the air unnecessarily; and, if the chill comes, cover her up until reaction has set in, and she feels warmer.

Do not allow her, under any circumstance, to help herself; gently and steadily pull from under her the soiled cloths and garments; then draw down the bandage, and pin it snugly around her; pull down her dress, and cover her warmly. Apply a soft napkin to the vulva. Should the

soft parts be very sore, they may be bathed with tepid water, medicated with tincture of arnica.

If a physician has been in attendance, after his departure leave the patient to repose, and let no overscrupulously cleanly person interfere. Too much intermeddling is the cause of severe after-pains, or of more or less dangerous flooding. If the patient be allowed to sit upright, the blood will accumulate again in the uterine veins, distend them, and cause coagulations of blood that will induce violent after-pains; and if the blood does not coagulate, but flows away, it will produce the most violent and dangerous flooding. The patient is thus exposed to the risk of her life at a time when every moment of repose is of the highest value to her.

After the mother has had some rest, and the child is dressed, it should be presented to the mother. She will look with pride on her offspring; and the joy caused by the first sight of her babe will act beneficially on her mind and system. Allow the mother then to tender the breast to her baby. The first flow of milk is the first medicine that the child receives. It is a natural laxative, to clear its bowels from the meconium, which is a dark mucilaginous matter. The act of nursing stimulates the breasts, and the reflex action stimulates the womb to healthy contraction. Threatened hemorrhage has been suspended by this act.

TREATMENT OF THE NEW-BORN BABE.

If the mother is strong, the baby may be allowed to draw from the nipple for several minutes; but if the mother be nervous and irritable, and the efforts of nursing cause violent contractions of the womb, it should be taken from her and placed in a soft warm bed. If the child cries, and is restless after this, as if it were hungry, a few drops of sugared water may be given it. Keep the room darkened, and do not turn the child's eyes to the light. The room should have ventilation by allowing open a door that communicates with another room, but no draught.

The birth of a child is a source of joy and excitement in a household. Every member is impressed with the desire to run and congratulate the mother. This should be allowed only after the mother has had rest, and gives sure signs that she is in good condition. Let no one, in an outburst of joy, jump at her, but let them approach her calmly and happily. A great joy may be changed into a great sorrow by not adhering to these rules.

Lochia is the name applied to the matters that escape from the genital organs of the mother after the delivery of the secundines (after-birth and membranes). They play a very important part in the welfare of the patient, and should be carefully noticed. While it is very variable in quantity in different cases, and even in the same patient at different times after delivery, it may, perhaps, be taken for an average that she will have occasion to employ the nurse to remove six napkins, well filled, during the first six hours, four during the second, two in the third, and one in the last six of the twenty-four hours after delivery. She will probably require, on an average, a napkin every six hours.

These discharges change also in quality. While in the first six hours they may be composed of pure blood, later they become more and more watery, which can be detected by the yellowish hue they assume, and by the paleness of their color, until after the sixth day, when the color of blood has almost entirely disappeared. The lochial discharge is apt to be more copious in women who have borne many children, who have been subject to profuse menstruations, and who have been addicted to stimulants and rich diet.

DANGER OF MILK FEVER.

A sudden cessation of these discharges before the twelfth day is of sufficient importance to apprise the physician without delay. The consequences may be serious. The milk fever has the effect of greatly lessening these discharges; but, as soon as lactation is established, they should re-assume their previous vigor.

If the sanguineous lochia is produced far beyond the usual term, it may be an indication of inflammation of the womb, of some lesions of the parts, or of careless mismanagement in diet or regimen. Inform your physician of it. In some instances, these discharges persist on account of general debility, and assume an exceedingly disagreeable odor.

To bring them on after suppression, apply moist and warm applications to the vulva; also injections of infusion of Chamomile Flowers, warm.

The propriety of using chloroform in midwifery has been very much debated among medical men; and, while some use it without fear, others would not give it under the most pressing circumstances. In this question, however, it is experience that must decide. Those who would not try it under any consideration will hardly have an opportunity to know its

success; hence their judgment is rather the offspring of prejudice. Many have tested the practice, and bear testimonials in favor of it. Prof. Simpson of Edinburgh states, that, in many thousand cases of labor in which chloroform has been administered, not one case of accident has been recorded. To this testimony, I must add my mite of confirmation, although I never administer it unless requested by the patient and the husband to do so.

J. M. Ward, Professor of Obstetrics and Medical Jurisprudence, in his valuable monograph on "Chloroform in Midwifery," says, "It is not necessary in midwifery to induce a full and perfect state of etherization, except when an operation upon the mother is necessary. The object, in simply severe labor, is to moderate or diminish the suffering. So true is this in practice, that cases are constantly occurring, in which etherization is induced, and the patient herself determines the extent to which it shall be carried, by a partial or perfect inhalation of the anæsthetic.

THE USE OF CHLOROFORM.

"In the intervals of uterine contraction, the instrument is removed by the patient, or by her direction given in some way, and which is at once understood. She knows when the pain is coming on, and demands the inhaler. She graduates the supply, so to speak, to the demand; and in this way is presented to the observation of the practitioner one of the most important and interesting agencies in operation for relieving suffering, which he ever observes.

"Patients of delicate nervous temperament often suffer severely from nervous agitation. Great nervous excitement marks the first stage of labor, and sometimes continues through the whole period of parturition in females of such a temperament. A degree of nervous apprehension marks the commencement of each pain: they feel their pains most acutely, lose all control of the will, and express their suffering in the most heart-rending manner. To such conditions of system, chloroform seems to be so admirably adapted as often to act like a charm in dissipating the patient's suffering, and when the system is but partially brought under its influence, to fortify it by soothing the nervous system.

"It checks those irregular and spasmodic pains which retard the proper expulsive efforts, and by taking off the resistance which the will offers to the contractive pains, shortens materially the duration of labor. Chloroform, unquestionably, is the most reliable remedy for

taking away the anguish and distress, which often proceed to such an extremity of suffering as seems unendurable by the patient, and saves, too, the practitioner and friends from the pain of witnessing those struggles and that agony which often completely unnerve them.

"This suspension of muscular action and muscular resistance saves the patient from the exhaustion attendant upon ordinary labor, and enables her sooner to recover from the effects of labor upon the system; protects her from the shock the nervous system sustains, as well as the soreness so common from the strain of the muscles; and inasmuch as the patient is saved from exhaustion, so is she from the diseases of the puerperal state dependent upon the exhaustion of nervous power. Hence we are warranted in saying, chloroform not only saves the patient from the pains of labor, but, measurably, from the perils of childbirth."

Chloroform, however, should never be administered to patients who have been affected by diseases of the heart or the brain, or who are then suffering from asthma, and disease of the lungs.

MEDICAL SKILL INDISPENSABLE.

It should be administered by a skilful medical man, and practitioners, except in cases where there is necessity of an operation, should not offer the administration of chloroform: they should only act upon the request of the parturient and the husband. The chloroform should be of the purest kind: it should be obtained from the most reliable apothecary.

In the administration of it, care should be taken not to debar the patient entirely from the inhalation of air. This can be done by rolling a napkin in a cornucopia shape; put within it a small sponge impregnated with chloroform. The cornucopia is then applied between the nostrils and the upper lip, leaving thus the mouth free to inspire atmospheric air. From one to two minutes will be required to produce a sensible effect on the patient. This is done a little before the pain commences, and is discontinued as soon as it is evident that she is indifferent to the pain, or as soon as the pain is gone.

It should be administered on an empty stomach; and, if the effect is bad, a little wine, brandy, camphor, or aromatic spirits of ammonia, can be administered. Let there be plenty of air in the room and around the patient, and fan her between the periods of administration of chloroform.

LACTATION, OR FOOD FOR INFANTS.

CHAPTER XVI.

THE most important function for the welfare of the mother and the life of her baby after delivery is the natural mode of feeding. The process of the formation of milk in the female breast during her lying-in state is called the "milk-fever." Although a truly natural and normal process, it does not occur without creating some disturbance in the woman's system. Immediately after delivery, the breasts yield, on suction, a liquid of a yellowish color, and of a sweetish taste, called in medical parlance, "colostrum." This milk seems to act like a gentle and necessary purgative on the child. For twenty-four hours, it retains these qualities, when it becomes whiter, and of different consistency.

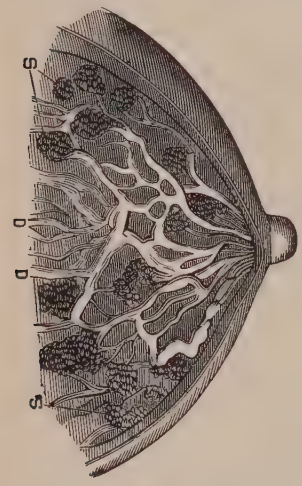
Forty-eight hours after delivery, the breasts begin to swell; and this change is attended by a slight chill, thirst, and perhaps headache; this state is followed by heat, dryness of the skin, which is succeeded in a few hours by a copious perspiration. The fever lasts from twelve to forty-eight hours, sometimes even three or four days.

During this febrile condition, the enlargement of the breasts increases, until, in some cases, the distention is so great as to become exceedingly painful, and even to invade the armpits, which prevents the bringing-down of the arms alongside of the body.

This distention of the breasts should be relieved by the suction of the child; and in cases where the nipples are so drawn in that the child's lips cannot grasp them, or where the child is so weak that its attempts fail in drawing any milk, or do not draw sufficiently to relieve the breasts, the nurse, or an older or stronger child, should be applied to the breasts. Some nurses are very skillful in thus emptying the breasts by the suction of their own lips. Should not this be obtainable, and should the milk increase so fast as to apprehend an incursion of inflammation, a breast

pump should be used; and, should even that be not at hand, a young pup will perform the needful act very satisfactorily.

The best breast-pump is that which is made partly of glass, and partly of gutta-percha. The glass part contains the mouth, which is to take in the nipple, and a glass bulb as a receiver of the milk: the gutta-percha part is a syringe with a piston. It is the easiest and most successful instrument for that purpose. As the force of suction can be controlled by the person applying the pump, the pain often caused by the act can be avoided by drawing and pushing the piston slowly and gently. This pump is also the best instrument to use when the nipples need being moulded to a shape that will go into the baby's mouth, or drawing them out when they are sunk into the breast.



INTERNAL STRUCTURE OF THE BREAST.

S, S, Sacks; D, D, Ducts.

M. Beluer, in his investigations to determine the precise period at which the flow of milk takes place, found that, of 974 women, in 22 it occurred within the first day after delivery; in 170, on the second day; in 347, *on the third day;* in 266, on the fourth day; in 100, on the fifth day; in 22, on the sixth day; in 5, on the seventh day; in 4, on the eighth day; and, in 1, not until the eleventh day: so that the rule of largest average places the time on the third day.

By the time the fever is over, ordinarily the secretion of milk is very abundant, and the breasts have attained their greatest distention. If the child draws well, they are emptied every time it sucks, and no engorgement is to be feared; but should the child not draw, or the mother choose not to nurse her infant, the greatest precautions are necessary to prevent engorgement, inflammation, and suppuration of the breasts. For this purpose, everything tending to the formation of milk should be avoided. The diet should be a very spare one; and the drinking of ale or other stimulants prohibited.

Warm, emollient applications, such as flaxseed-meal or slippery-elm poultice, should be made to the breasts unremittingly, with a view to excite perspiration that will relieve the tension. The precautions of drawing the milk as above described should be adopted. Even the application of camphorated ointment is very useful in diminishing the quan-

tity of milk. A strong infusion of sage, taken in doses of one or two ounces, every three hours, is said to greatly diminish the secretion of milk. An ointment of the extract of belladonna, reduced to the consistency of thick paste, spread around the nipple for an inch and a half beyond it, has been used with great success in reducing the mammæ and the knots into a flaccid, comfortable state. This, used in time, may prevent gathering of the breast.

In cases where the breasts seem full of milk, and yet the child is not able to draw a sufficient quantity to satiate itself, or to relieve the breasts, the difficulty may be due to a clogging-up of the little ducts, which would require one of stronger force to draw and fairly start the flow: for this purpose, the nurse or pump should be employed until the milk flows easily; then apply the child.

CAUSES THAT AFFECT THE MILK.

A child may seem satisfied after a few moments' nursing, and even fall asleep; but it may soon wake again, and seek for the breast: this would indicate that its strength was exhausted in drawing for those few moments, or that the mother had not a sufficient quantity of milk to feed her child.

The quantity of milk varies in different women. A woman, although in every respect healthy, may barely be able to supply milk enough to supply her child; whilst another may be able to suckle several at a time, Hygienic and moral influences affect, also, the quantity of milk. The nurse's age, and the size and form of the breasts, are of importance, although women with very small breasts often give a profusion of milk. Women of lymphatic temperament, where fat predominates, are liable to have little milk; and a generous diet, instead of increasing its quantity, seems only to become converted into fat. Whatever may be said to the contrary, it is a well-proven fact, that even the quality of food influences more or less the formation of milk.

A more distressing occurrence to both mother and child, however, is when the mother, through some constitutional abnormality, is not able to supply her infant with sufficient milk. Every means that may increase the secretion of milk should be adopted. Her diet should be nutritious; and, should the deficiency of milk seem to depend upon her weak condition, some stimulant, as ale, or soup with wine, may be partaken of with great advantage.

A decoction of "ricinus communis" (the castor-oil-plant) is used with great success by the nurses in some parts of South America. They make a strong decoction of the leaves, and with it bathe the breasts two or three times a day. It is said, that, after a few applications, the breasts begin to swell, and very soon discharge milk. It is used by professional wet-nurses to prevent the drying-up of their milk, and thus ending their occupation.

Dr. McWilliam reports so strongly in its favor, that it is very well worth trying, as no bad effect can follow the application. It should be applied warm, of course, and even in the shape of a poultice. The breasts which are deficient in milk should always be kept very warm; and warm emollient applications are always useful.

QUALITY OF THE FOOD.

Milk may be very fluent, and yet of a very inferior quality. To be good, it should be white, opaque, sweet, and of a very pleasant taste. It contains globules of fat or butter, caseine or cheese, sugar of milk, salts, and a little yellow matter. A drop of good milk on a plate of glass will not run off easily: it will maintain a globular form, and adhere somewhat to the glass. Not so with milk deprived of its solids: it will run off quicker than water on the slightest inclination of the glass.

The health of the woman nursing is of importance; for, while one disease may cause the solids to increase, and, in proportion, the water to decrease, another, *vice versa*, decrease the solids, and, in proportion, increase the water. The first will make the child liable to indigestions: the latter will deprive it of sufficient nutriment to maintain life. The age of the mother. Very young and very old women's milk is apt to be watery and unnutritious.

Acute diseases tend to diminish the proportion of sugar, and increase the quantity of butter. In chronic diseases, the sugar remains the same; but the solids are diminished. The milk of consumptive nurses is very deficient in butter.

The inference is, therefore, that, when infants must be partly fed while the mothers are suffering from an acute disease, less milk, and more sugar and water, should be added to their food; and more milk, and less sugar, in chronic affections.

Moral affections, such as sudden joy, grief, fright, anger, disappointments, will alter the milk in the mother, and render it even dangerous to

the child. When this is the case, the mother should refrain from nursing her infant until she is quite composed, and her breasts have been, once at least, thoroughly emptied by the pump, or otherwise. Spasms and death to the infant have occurred in consequence of disregarding this precaution. In nervous women, the milk is apt to be very thin, and of a greenish color.

While, in some instances, women, although menstruating while nursing, have thriving infants, there are many whose milk deteriorates so much as to be insufficient for the nourishment of the child. This is soon discovered by observing that a child, although in apparent health, constantly loses in strength and flesh.

Pregnancy during lactation is a very unfortunate occurrence. It will not require a great strength of intellect to understand that the mother could not supply food to a being in the world while she is supplying food to one in her womb. One of the two must suffer; and as the sympathy that exists between the womb and the breast is such that the latter are always affected by the conditions of the former, it will be so in this case; and the milk will so deteriorate in quality as to be totally unfit as food for the child.

ARTICLES OF DIET AND MEDICINE.

The most experienced accoucheurs advise pregnant women to relinquish nursing from the moment that they find themselves pregnant. Isolated cases in which a woman has succeeded in raising a healthy, thriving child by her own milk, while she was pregnant, are not sufficient reasons for a woman to disregard this general principle.

Effect of certain alimentary or medicinal substances on the milk. It is an indisputable fact that articles of diet or medicine impart to the milk some of their properties, which are conveyed to the child through nursing. One has only to eat garlic to detect the odor, or saffron to detect the peculiar color, in the milk. Anise-seed tea, taken by the nurse, has cured flatulent colic in babies; and a purgative taken by the nurse has often purged the child. In hereditary diseases, doctors have cured the child by treating the nursing mother.

This experience should be sufficient to caution the nursing mother against the use of such articles as onions, beans, cabbages, spirituous liquor, medicines, and all such things as are known to affect her disagaeeably.

Nurses who are poorly fed will find that the quantity of water in their milk is apt to increase; while, in those who indulge in the pleasures of the table, the solids will increase the former will make but poor milk, the latter too rich. A sensible woman can easily avoid these difficulties, and raise a healthy baby by adopting a reasonable diet.

Violent exercise will affect the milk. The mother should never run home, and, as quickly as she enters her chamber, open her breast to the child. She should rest an hour at least after returning from a heated walk, cool down, and then nurse her baby.

The retentive power of the mouths of the milk-ducts on the nipple is sometimes so greatly diminished as to permit the milk, when formed, to flow away continually. A want of tone in the fibres of these ducts is the cause of the incontinence. This may be a source of serious trouble to the mother, who, besides regretting to see the fluid that is to nurse her child flow away from her, is annoyed by the discomfort of having her clothes kept constantly wet.

MAMMARY GLANDS, THE LOWER HALF DISSECTED.

Nipple-glasses well applied will prevent the milk from running over the dress. Such glasses are found in every drug-store. Still they should be used only when absolutely necessary; for, having the air exhausted in order that they may adhere to the breast, they draw, thus keeping on the flow which should be prevented.

The formation of milk may be so rapid and excessive as to greatly endanger the health of the mother. General debility, loss of appetite, a sensation of heat in the stomach, pains and dragging sensations in the back and chest, are symptoms that will soon make their appearance. If this is allowed to continue, the "nurse's consumption," so called, may be brought on. The patient gets weaker and more emaciated every day, until hectic fever sets in as the precursor of an early death.

Weaning is, in such a case, peremptory, in order to save the mother's life. As soon as the milk ceases to form, the patient gains in strength; and a change to the country will greatly assist in her ultimate recovery.

Dr. Tyler Smith says, "The cases of insanity which occur as the result of excessive nursing are very similar to cases of puerperal insanity, only that their symptoms come on in a more gradual manner. When nursing women complain of loss of sight or hearing, or headache, either their nourishment or stimulus should be increased, or suckling should be at once discontinued. Where there is any predisposition to insanity, mothers should not, if possible, be allowed to suckle their children. In all cases of this kind the dependence of the mania upon exhaustion is abundantly evident. It is especially likely to happen when pregnancy and lactation are allowed to proceed simultaneously."

SYMPTOMS OF OVER NURSING.

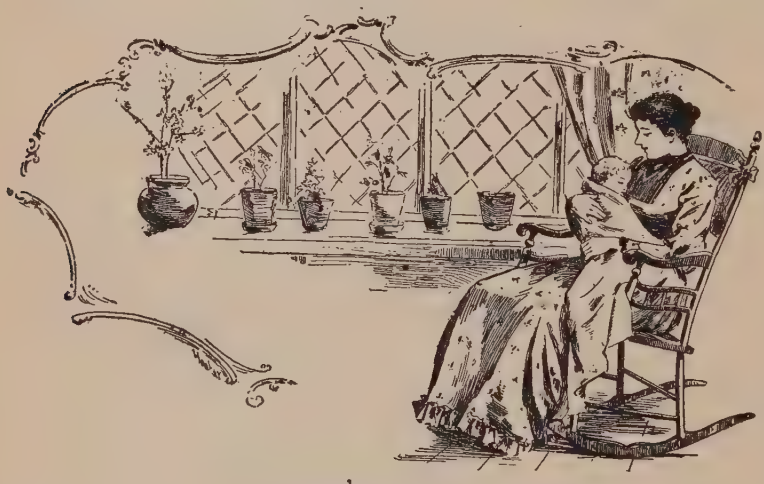
Leddam gives the following symptoms indicating that nursing is affecting the mother: "A sinking and fainting in the region of the stomach with a sense of emptiness, which lasts a long time, and soon returns, even after food had been taken; a general weariness and fatigue; a want or refreshment from sleep; an aching and dragging in the loins, and pain between the shoulder-blades, or in the side, beneath the left breast; distressing exhaustion after the infant has been at the breast; the pulse is quick and feeble; the extremities cold; short breath and palpitation at the least exertion, or on going up stairs. If the cause is continued, headache and vertigo, noises in the ears, numbness of the extremities, impaired vision, loss of memory, irritability and despondency, with thirst, dryness of the tongue, and night perspiration, ensue. Pulmonary consumption may be developed; leucorrhœa, dropsy of the face and feet, profuse menses, neuralgic affections, supervene; and mania has not unfrequently formed the sequel."

These symptoms are sufficiently formidable to warn women against too much and too long continued nursing. The fact that the child thrives is no reason for them to sacrifice their life, when other means can be found to supply the child with food that will be equally good for it.

Weaning should be at once commenced: the attempt to force the supply of milk by large and frequent quantities of beer, wine, or spirits, will only tend to the more perfect exhaustion of the mother. If cocoa, wine-whey, weak milk punch, caudle, cheese, etc., aided by frictions of

the breasts, do not suffice to keep up the strength of the patient, and a full supply of good milk, all further attempts should at once be abandoned.

Can a mother in good health substitute a better nourishment for her own infant than her own milk? No. Whatever art or science may invent to replace the mother's milk, they will only succeed approximately, never intimately. Therefore, the mother who willingly refuses her breast to her babe lacks the very fundamental attribute of a mother, —love for her offspring. She is willing that her babe should have an indifferent or noxious diet rather than its natural food, inherited, and due to it as the most sacred of its rights. An unnatural mother she must be who is willing to relinquish the creature of her love to a cow, a she-ass, a goat, or to a woman, who, even from necessity, makes a trade of her breast. Morally, I should abhor the mother, who, conceited of her own beauty, enslaved by her own pleasures, held by the relentless grasp of fashion, could hush her maternal instincts, and refuse her bosom to her appealing infant, to plunge herself into the vortex of self-indulgence.



THE MOTHER'S JOY AND PRIDE.

The result may be frightful in the extreme. What if the nurse inoculates some hidden disease to the child? What if an error in the preparation of artificial food should cause an indigestion that would carry the darling to its grave? Would her apology, that other women have successfully raised children "by hand," hush and soothe the pangs of remorse that would overwhelm her, unless she is so far gone and hardened in self-indulgence as to be proof against the piercing throes of moral consciousness? Better, better never to have seen this godly offspring of your affections, than bear the guilt of its extinction.

Ill health, constitutional diseases which would make nursing a source

of danger to the mother's life, or to the well-being of the child hereafter, and these only, should debar a woman from nursing her own infant. Slight irregularities, want of robustness and vigor, should not be too easily used as a pretext to relieve one's self of this duty. Women who have very small breasts, and a delicate organization, supply often an abundance of good milk to their infants, with benefit to their own health. It must be borne in mind that this is a natural process, and that, therefore, there is more danger in not performing it than in allowing it to have its natural course.

Nursing will prevent the engorgement of the breasts, abscesses, fissures of the nipples, and other difficulties a newly-delivered women is liable to when she does not nurse. A woman of scrofulous constitution, one addicted to recurring diseases of the skin, or subject to hereditary diseases,—as insanity, consumption, syphilis, inflammatory rheumatism, gout, disease of the heart,—should not nurse her infant. In any such case, however, her physician should be consulted.

MALFORMATION OF THE NIPPLE.

The nipple may be more or less developed, and, according to its development, it may present more or less difficulty to nursing. There are instances in which the nipple is almost entirely obliterated, or has never been allowed to develop, through an early pressure made upon the breasts by tight corsets, and by false compresses, used to improve the appearance of the shape, or to make a dress fit according to fashion.

There are instances of natural malformation, also, where the nipple not only does not project, but actually occupies a depression, rendering it impossible for the child to get at it.

Whenever such difficulties exist, the woman should adopt early precautions to improve the conformation of the nipple. A very good method, one which gives but little trouble, as it requires no assistance, is the daily application of the pump to the breasts two or three months before labor. Let the pump be applied so as to take the nipple within its chamber; let the air then be exhausted by withdrawing the piston, and the nipple will be pressed within the chamber, very much elongated. It should be retained there for fifteen or twenty minutes each time; for thus may be gradually produced a well-shaped nipple where was but an incipient one.

After the application of the pump, wash the nipple and the surround-

ing areola with arnicated water, or with glycerine, or any fatty matter that will keep the skin supple, and prevent excoriations. The nipple-shields that are used to protect the nipple by compressing around it through the pressure of the corsets are not very successful; and the constant pressure might cause ulceration: hence this mode cannot be recommended.

Suction by the husband or by an intelligent nurse is not only effective, but more natural, in the preparation of the nipples. This should be done twice a day. After each time, the nipples should be washed with arnicated water, and covered with wax, as follows: take a piece of white wax, immerse it in warm water to soften it, spread it out, and then press it around a finger so as to give shape to it; then apply it so as to retain the elongated nipples within it. Another method to elongate the nipples is to tie a bit of woollen thread or yarn two or three times around the base of the nipple after having it gently pulled out with the fingers. It should be tied snugly, but not enough to impede the circulation: it can be worn three or four weeks.

HOW TO DEVELOP THE FLOW OF MILK.

These processes should be commenced about two months before delivery, and continued until the nipples maintain a good and prominent shape. The same treatment may be used during nursing, if the nipples are too short.

In case a child is so weakly as to be unable to draw from a short or an ill-developed nipple, let a stronger child nurse first, so as to give it shape, and cause the milk to flow freely. It may be necessary even to allow the weakly baby to nurse from an easy breast until it has become strong and vigorous.

During the nursing, erosions, excoriations, chaps, fissures, and cracks of the nipples, often occur, which render nursing not only painful, but unbearable. After nursing, do not expose the nipple to cold, but wash it with warm water, and protect it. The exposure of the nipple to cold may bring on an inflammation, which may be followed by ulcerations, chaps, and crackings. Women of a fine and sensitive skin are very liable to these troubles in the first month of lactation, and should therefore be particularly careful; for the pain caused by the child's seizing the nipple may be so great as to cause even an affectionate mother to relinquish nursing.

Mothers of a very delicate skin should make the effort to harden the nipples before delivery; and this can be done by gentle frictions with the dry hand, by repeated and daily applications of arnicated water, glycerine, or tannin. An ointment which may be applied with gentle frictions on the nipple for a month before delivery is the following: cocoa-butter, two drachms; oil of sweet almonds, two drachms; tannin, two drachms.

When these erosions, cracks, and excoriations are present, nursing should be done as rarely as possible, so as to give time to the ulcers to heal. Great care should be taken to wash the nipples after each nursing; first with warm water and white castile-soap, then with a solution of borax or alum. They should then be covered up with collodion. Collodion should be spread over the cracks and excoriations with a camel's-hair pencil; it will make a pellicle impervious to the air. If the baby's milk sours on his stomach, wash the nipple with lime-water. If the baby has the thrush (minute ulcers in the mouth), wash the nipple with a solution of borax.

Glycerine may be applied with benefit. Glycerine and Tannin, equal parts, is an excellent application. The nipple should be well washed, however, before offering it again to the child.

OINTMENTS MIXED WITH MINERALS.

For applications of ointments or solutions containing mercury, nitrate of silver, sulphate of zinc, or other powerful astringents or minerals, the physician should be consulted.

An artificial nipple or shield may be used with great relief to the mother, if the child can be made to take it. To induce the child to take it, fill it up with warm milk as you apply it to the breast: as the child feels the flow of milk in his mouth, he will grasp it, draw the milk it contains, and, as the air between the shield and the nipple becomes exhausted, the shield will cling to the breast, and the process of nursing will go on with much less pain to the mother. The cracks will open even then; but they would not be exposed to the friction and pressure of the child's tongue, and would therefore have a better chance to heal.

Internal treatment, although I doubt its efficacy as long as an external irritation is kept up, is suggested by many, and may prove useful when the local irritation induces an excitement of the whole system.

The subject of "Insufficiency of Milk in the Mother's Breast" has already been treated. The paragraph, however, treats only of the manner

by which the quantity of milk may be increased. When the quantity cannot be increased on account of some constitutional disturbance, or of some conformation of the breasts, the necessity follows, that the child must receive some other nursing besides that of its own mother.

Mixed nursing is one of the most dangerous modes of raising children, unless great care is taken that the mixed food does not produce derangements of digestion.

It often happens, that, after two or three months' nursing, the mother becomes aware that her milk does not satisfy her child, and that, although in perfect health, it loses flesh all the time. The necessity is then apparent that the child must receive some other nourishment besides its mother's milk.

WHEN THE WET-NURSE IS NEEDED.

A wet-nurse is the first means to be thought of to supply this deficiency, provided the mother can be reconciled to share with another being the nursing of her own child. We cannot but sympathize with the mother who is too jealous of her baby's love to allow any other woman to rob her of a part of it, and could not insist upon her relinquishing her maternal instincts, and taking a wet-nurse. In this case, cow's or goat's milk, or other things, should supply the deficiency. This should be done, however, as soon as possible; for, the more the child becomes accustomed to the breast, the harder it will be to make it take the bottle.

When mixed nursing is adopted, the mother should nurse the child in daytime, and feed it by the bottle at night: this will insure a good night's rest to the mother, so much needed for the formation of milk.

After the fourth or fifth month, if the mother's milk still decreases or becomes deteriorated in quality, or if the mother's strength greatly suffers in consequence, it would be well for her to give up nursing altogether. At this age, children under artificial feeding thrive better than they do at an earlier age, and there is little to fear for their welfare. At this age, many people commence feeding children with paps and panadas; and as they are often successful, particularly if the child thus fed is of a vigorous constitution, they advise others to follow their example. I must insist, nevertheless, that a child under ten months of age is safer when fed by cow's, goat's, or ass's milk, than by farinaceous food, however well it may be prepared.

When the child is presented to the mother commences that period of

nursing, which, with few modifications, is to be continued for many months. All the paragraphs in this work, treating of "Lactation," should be carefully perused and observed by the mother, to enable herself to maintain a good quantity and a good quality of milk for her child.

Good habits are as conducive to the welfare of an infant as they are to a grown person. Habits are acquired through a persistent method of application, and, when formed, our system responds to them with regularity: a child may thus become thoroughly regulated by the will of the mother. Regular habits will greatly contribute to the well being of the infant; for its intervals of rest, sleep, or nursing, need never be interfered with, and the equilibrium of the functions of its organs so well maintained, that it could not get sick except through accident.

TEACHING THE CHILD REGULAR HABITS.

Regular habits is the first lesson in the education of that being which can only grow by the fulfilment of all the laws of Nature. As the child commences with purely an animal life, so feeding is its first act, its first thought, its first desire, in maintaining its existence. Feeding plays the most important part in the sustenance of its animal life. And, as the child cannot for some time bring its animal instincts under the discipline of reason, it follows that the mother must impart to it, through a method consistent with the requirements of nature, those habits which will be conducive to its well being. Only a woman who has brought up children regularly and irregularly can tell the ease and comfort derived from the former, and the difficulties and annoyances derived from the latter. Hence make your rules for nursing, and adhere to them with a pertinacity worthy only of a mother who loves her child.

Nurse your child at stated hours, and do not deviate by a minute: soon you will have the happiness to see that your child will awake only at those hours, as regularly as the hand of the dial points to them. The intervals will be periods of refreshing sleep to the child, and of needed rest to the mother.

During the day, for the first two months, if your child is vigorous, nurse it every two hours; during the third and fourth months, every three hours; after that, every four hours. Should you do otherwise, and should you nurse the child every time it cries, you will overload its stomach, without giving it a sufficient time to digest the food; an error that will tend to gradually derange the digestive functions, and induce all its fear-

ful consequences of indigestion. Besides, the child will soon begin to know that it can nurse whenever it cries; and then it will cry very often, and give signs that it wants the breast every time.

Should its cries sometimes be only the result of nervousness or uneasiness produced by indigestion, your nursing, instead of relieving, will only add fuel to the fire. Slow digestion will cause flatulence, flatulence will cause colic; and when you think that the child cries and desperately throws itself about for food, it is only giving notice that it has cramp-colic in its belly. The fact that nursing often quiets the child is taken as an indication that it needed food. That is a mistake: a little more food may stupefy it, rendering it less conscious of its pains, but this is only temporarily so; in a little while, the child will cry and writhe worse than ever.

REASONS FOR CHILDREN'S CRYING.

Children may cry even without any appreciable reason; it is a way they have sometimes to entertain themselves; they, too, like to hear their own voice. If that indulgence does them no harm, let them cry; their lungs will receive the benefit of this muscular action.

The cries of hunger, which may occur soon after feeding, if the mother's milk is poor in quality, are generally accompanied by throwing the little arms about, turning the head to the breast, and opening the mouth to every thing offered.

If the child is weak, and can nurse only a little at a time, it may, of course, be necessary to nurse it oftener; but this should be done only with a perfect understanding of the child's condition.

At night, the child should not be nursed as often as during the day. For the first three months, nurse it when you put it to bed, say six or seven o'clock, P. M.; then at eleven or twelve o'clock; then at five or six, A. M. After that period, you may omit the midnight meal, and, if the child wakes, give to it a sip of water. This method will secure many an hour of good sleep to the mother, and give wholesome habits to the child.

A child in good health generally wakes spontaneously when it needs nourishment. Some children, however, are slow in taking the nipple. In that case, wet the nipple with a little of the milk, and titillate the child's mouth with it until it takes hold. When the child does not wake, through constitutional weakness, it should be wakened at stated periods. If it is

very weak, it may sleep almost constantly, and the mother may rejoice at the quietude of her infant; but she will soon find that the child is less and less inclined to nurse after each prolonged sleep, that it cries very weakly, and is ready to go to sleep again.

Such evidence of weakness is dangerous in the extreme; and the child should be at once undressed, taken to a warm fire, and rubbed briskly with a flannel moistened with some stimulating substance, as alcohol, whiskey, brandy, or camphorated spirit; and, if the child is still disinclined to nurse, milk should be drawn from the breast and given with the spoon until there are signs of restoration of strength. It should be wakened every hour or two, and fed as above, until it is able to take the nipple, and nurse itself.

BEST TIME FOR WEANING THE CHILD.

It is difficult to say how long a child should nurse; for what is plenty for one may be too little or too much for another: but, if in good health, the child may be allowed to nurse until it is satisfied, for Nature will relieve it by a good throwing up if it has taken too much. If the act of nursing lulls it to sleep before it has had a fair allowance, wake it up, and it will go on nursing again. As soon as it has had enough, and drops asleep, put it in its cradle; do not retain it one minute longer on your arms, lest it might take cold, or contract such habits of sleeping out of its bed, that will be difficult to conquer when the holding of the child becomes a labor, and ceases to be a pleasure.

While the child is at the breast, notice if it swallows; for often it plays with the nipple without drawing the milk; the act of deglutition is very apparent by the motion of the throat.

Never neglect to make the child *nurse at both breasts* during the same meal: this will prevent engorgement of one breast while the other is emptied, and will also accustom the child to lie on either side without preference.

In case the breasts become so distended with milk as to be painful to the mother, and make it difficult for the child to hold the nipple deeply embedded in them, the pump should be applied, and some milk drawn before nursing.

Breast-glasses or reservoirs can be worn by the mother. The air in them being rarified by breathing hot air within them, they will gently draw as they cool, and receive milk that will flow from the over-extended

breasts even by the pressure of the dress. These will act twofold: they will relieve the breasts, and save the dress from being constantly wet and soiled.

Nursing women require rest and sleep for the formation of plenty of good milk: consequently they should not keep the baby in bed with them; for it will soon learn its way to the breast, and nurse all night, even unknowingly to the mother. This would be very injurious to the child, besides exposing it to the accident of crushing or suffocation. If the mother has an attendant, let the latter carry the child to her at the stated periods; if not, and the mother is compelled to keep the child in her own room, it is better that she should get up and take her child than run the risk of keeping the child in her own bed. A baby in her bed will sink lower than the pillow, and may eventually be covered over by the bed-clothes, compelling it to breathe the impure air emanated under them, while the purest air is necessary to its existence.

COLD AIR AND GATHERED BREASTS.

Do not expose your breast to the cold air; for, in its sensitive condition, it is liable to take up inflammation, which will end in abscesses or gathered-breasts, commonly called, so terrible to the mother, and dangerous to the child: avoid, therefore, nursing a child while taking a drive in a carriage, unless it is in a warm summer day.

Never nurse a child immediately after a heated walk or a fit of anger: rest, and get cool. After a fit of passion, it would be better to draw out the milk with the pump, and wait for a fresh supply.

The natural food for a child is woman's milk, not cows's or goat's. Whenever it is decided that the mother is not to nurse her infant, the breast of a healthy woman should be procured to fulfil the laws of Nature as to the child's diet.

In the selection of a nurse, the physician should be consulted. No mother should engage a wet-nurse without her having been examined and indorsed by a skilful and conscientious physician. So far as her physical condition is concerned, he should be the only judge.

The appearance of the nurse should be one to indicate health and strength; her skin should be clear, and free of all eruptions. Enlargement of the glands around the neck indicate a scrofulous taint, which should be strenuously objected to. Cicatrices around the neck indicate a previous existence of enlargement and suppuration of those glands.

Although beauty should not be an indispensable attribute of a nurse, a good face, a pleasant expression, will be agreeable to the mother, who must make of this woman almost a companion for several months.

Intelligence, unstained character, and a general good disposition, are necessary qualities for a foster-mother. A bad countenance is as repulsive to a baby as to a grown person. The probity and morality of the woman should be above suspicion.

Since the moral, as well as the physical condition of the nurse, will influence the infant, it is important that she should be free of all vices and pernicous habits, such as a taste for liquors, an irascible temper, or a morose disposition. Violent passion can induce such an alteration in the milk as to be poison to the child. Affliction, care, and despondency in the nurse, will render a child nervous, peevish, and restless.

The age of a nurse should be inquired into; the ages between the twentieth and thirtieth year being the most suitable. The woman should be cleanly in her habits, and moderate in her eating and drinking. If she has her own baby at the breast, its appearance will be a criterion of her ability to give wholesome food to a child.

SORE MOUTH AND EYES.

She should put away her baby when she undertakes to nurse yours, for very cogent reasons. The nurse should have been delivered three or four weeks before the mother, to be sure that she has regained her strength, and is free from all the irritations concomitant with the puerperal state. But as the woman's milk may be too strong for a newly-born baby, and, moreover, as her milk then will not contain the colorstrum (that element found in the first flow of milk, which acts as a natural cathartic to the child to clear its bowels of the meconium), it is well to allow the child to nurse from its mother for a day or two, until it has dejected that blackish matter which would otherwise be retained as an irritant to its bowels.

A voluminous breast is not always an indication of a great power to supply milk; for, generally, it is fat that renders it massive. A small breast with large glands often supplies more and better milk.

For the quality of milk the paragraphs on that subject will be applicable to wet-nurses as well as to mothers.

Although a nurse may be in a perfect condition when she is engaged, perhaps a month or two before she is required, she should be examined

at the time she is to take the child; for in the interval elapsed, her condition may have materially changed. Should she become pregnant during nursing, she must be given up for another.

A woman who has nursed several children would be more acceptable than one who never nursed before; for her experience in handling and taking care of a child may be of great advantage, particularly if the mother is young and inexperienced. One who has several children is not apt to brood over the separation from her own child as a new mother would. It is true that a woman who has raised children may have contracted ways and habits which are objectionable, and which will be difficult for her to relinquish; still, even then, it is better than that the child should suffer from ignorance.

If a mother is compelled to engage a wet-nurse after having nursed her own baby for a few weeks or months, she should see that the nurse's milk is not much older than her own. A difference of two or three months would not be objectionable, if the baby is older than six month s

REQUIREMENTS OF THE WET-NURSE.

See that the nurse and her child are not affected by a sore mouth or sore eyes. Should the nurse's milk seem too rich for the baby, she should not nurse it to repletion; and, after each time, she should make it drink a little sugared water; this would dilute the milk in the child's stomach.

From the earlier paragraphs on "Lactation,"—"Insufficiency of Milk," "Quality of Milk," "Effects of Certain Alimentary or Medicinal Substances on the Milk," etc.,—the mother or wet-nurse may gather by direct advice, or by inference, much instruction in regard to regimen and diet.

A woman who is to bear the fatigue of nursing and attending a child should be supplied with a generous diet. Rich beef-broth, beef, poultry, and game, roasted or broiled, should form the most important part of her meals. She may partake of vegetables, with the exception of onions, garlic, cabbages, carrots, and beans. Highly-seasoned food should be avoided, as well as an excess of mustard, pepper, vinegar, pastry, and other indigestible condiments. Coffee should be avoided altogether, and tea (black) used with great discretion. Green tea should be avoided.

Although the woman should eat enough to satisfy her appetite, she should take care not to overload her stomach; for indigestion, vomiting, diarrhœa, or constipation would follow, to the detriment of the child also

Rest and freedom from anxiety and care, are indispensable. Healthy exercise and pure air, avoidance of dampness and colds, in fact, every thing conducive to health and good habits, should be carefully attended to.

It is a common practice to supply a nurse with much food, and strong drinks, such as ale, porter, etc., to induce a plenty of rich milk. This is often a great error; for, in thus forcing her powers of assimilation, you may defeat the very object you want to attain, by rendering her liable to all the terrible effects of indigestion. It is also a common remark, that "mothers who are suckling may eat any thing;" but do not forget that bad food cannot make good milk any more than bad food can make good blood.

The hours for meals should be regular; and late dinners, or eating late at night, are not conducive to the health of a nursing-woman any more than to any other. The use of tonics and stimulants should be avoided, except when ordered by the physician.

A wet-nurse should be allowed exercise according to her previous habits. Had she been a working-woman, she should be employed in light duties about the house. Was she a country-woman, do not confine her to heated chambers, but let her go often in the open air.

THE CHANGE OF LIFE.

CHAPTER XVII.

AS at puberty, from the ignorance in which it is still thought right to leave young women, so at the change of life women often suffer from ignorance of what may occur, or from exaggerated notions of the perils that await them. It would be well if they were made to understand that if in tolerable health, provided they will conform to judicious rules, they have only blessings to expect from the change of life.

This critical period may be dangerous for those who are always ailing, for habitual sufferers at the menstrual periods, and for those affected with uterine diseases; and if the sufferings of women were protracted previous to the healthy establishment of the periodical flow, they may likewise expect cessation to be attended by a corresponding period of suffering. Women should know that unless they be pregnant or nursing, great irregularities in the monthly appearance, or its prolonged absence, coinciding with sensations of sinking at the pit of the stomach, with flushes and perspirations, even though their age may only be between thirty and forty, may be considered warnings of cessation.

This knowledge would prevent cessation being considered in the light of temporary suppression, and forcing medicines being taken without medical advice. If, on the first indication of the change of life, women who are in fair health carefully followed a regimen and pursued a line of life in harmony with the physiological processes on which this change depends, disease would be prevented; but as the change concerns a

natural function, it is left to Nature; no additional precautions are taken, and advice is only sought for when the mischief is done. It is, then, well worth considering what are the rules of hygiene best calculated to prevent and cure the diseases of the change of life, referring these rules to the great functions of the human economy.

There is something more or less anomalous and morbid in the reproductive organs, and in their action on the system, during the first half of the change of life, and in the latter part of this period these organs have a tendency to become atrophied (shriveled). Can there be a clearer indication that their hitherto appropriate stimulus is likely to interfere with a natural process, while the change is going on, and that it is not wise to marry during this unsettled period? I have repeatedly remarked that, even in those who have been long married, connection at the change of life may be a cause of uterine disorders, which are of frequent occurrence in women marrying during this epoch.

MORBID IMPULSES AT THIS PERIOD.

Some physiologists say that, as a flickering flame gives a final blaze, so, in some women, sexual desire is strongest when the reproductive power is about to be extinguished; this occurs very seldom, and I have been repeatedly made aware that a distaste for connection was the sign of an approaching change. My experience teaches me that a marked increase of sexual impulse at the change of life is a morbid impulse, depending upon either neuralgic or inflammatory affections of the genital organs, and I corroborate Boismont's assertion, that "whenever sexual impulse is first felt at the change of life, some morbid ovario-uterine condition will be found to explain it, in nineteen cases out of twenty."

It, therefore, is most imprudent for women to marry at this epoch, without having obtained the sanction of a medical man. If this had been done in some cases that have come under my observation, flooding would not have been the result of marriage, slight uterine disease would not have been considerably aggravated, the march of undetected cancer would not have been hastened, and other women would not have become insane, as in the following case:

Mrs. B. was fifty-one when she consulted me; she had been all her life an intelligent, active, and determined woman, eccentric, but not nervous; and she married when about fifty, during the dodging time. In the wedding night she had severe uterine pain, and flooded to a great extent

during the following days, and then her mind became bent on suicide, with habitual fits of melancholy. Doubt was the characteristic of her mental state; she could not make up her mind to anything, and was always doubting about right and wrong.

When I first saw her she had not slept for a fortnight, and had sensations of burning in the breasts and the lower part of the abdomen, menstruation being irregular, scanty, and dark-colored. I gave morphia internally, ordered a succession of belladonna plasters to the pit of the stomach, effervescing draughts and warm baths. She got very much better in a fortnight, and was well in about six months, when menstruation ceased. Since this occurred, there has been no return of the mental disturbance, notwithstanding the long illness and the death of her husband and mother.

The following case also shows how women sometimes seek to stay the inexorable hand of time by protracting the regular appearance of the signs of womanhood, and another patient, who married at fifty, occasionally applied a leech to the pudenda (genital organs), to make believe that menstruation had not ceased.

AN ILLUSION DESTROYED.

Some years ago I was consulted by a lady, aged forty-eight, who, when about twenty-five, formed a strong attachment, but family circumstances prevented a union from taking place till the lady was forty-five. The discharge had proceeded regularly up to the period of marriage, but then ceased. As the sudden cessation coincided with gastric symptoms, with a distension of the abdomen, and, above all, with a great anxiety for children, the patient was considered pregnant, and carefully watched for many months. When the illusion was destroyed, the lady brooded over the possibility of her husband supposing that the courses had stopped previous to her marriage.

After a minute investigation, I expressed my conviction that the monthly flow had ceased. About a year afterwards I was asked to see her again, and learned that, having consulted someone else, she had taken steel, purgatives, and large doses of savine, until she had a terrific flooding. This was followed by a sanguinoid (bloody) discharge for several months, and other symptoms of inflammation of the body of the womb, of which there was no sign previous to marriage.

When menstruation is well over, there is no reason why widows

should not marry, although marriage will render them more liable than they would otherwise have been to vaginitis (inflammation of the vagina) and the milder forms of womb inflammation. It is a very serious thing for a spinster to marry about fifty, particularly if she be anxious, nervous, and excitable! Will she bear well the new life? Has she the power to adapt herself to new and enlarged circumstances? Will happiness be wrecked in the venture? These are questions to be seriously thought of.

At all times marriage should be followed by a most quiet life, still more so when contracted at the change of life. Fatigue should be avoided, and arrangements made for an hour's rest on the sofa in the middle of the day. Local irritation may be allayed by fomenting the parts with very hot water, or by adding a drachm of acetate of lead to a pint of cold water, to be used as a wash three times a day.

LESS OF FOOD AND STIMULANTS.

Having shown that the debility often experienced at the change of life sometimes depends upon the frame being oppressed by an overplus of blood, for which there is no longer a monthly drain, it is rational that on the very first appearance of the irregularities characteristic of this epoch, women should curtail rather than augment the amount of food and stimulants to which they have been accustomed. When in the family-way or nursing, or so long as the menstrual flow remains regular and abundant, many women can, without inconvenience, take meat three times a day, and beer and wine at both luncheon and dinner; but when the surplus blood produced by high feeding can neither be well employed nor regularly ejected, it increases all the sufferings of the change of life, and brings on obstinate biliousness and constipation.

I should be ashamed of insisting on anything so self-evident, if I were not often consulted by the plethoric patient, to whom generous diet had been recommended by medical men, to relieve the debility and nervous symptoms of which they complained. Some had disregarded the advice, because they found high living increased their sufferings and their sleeplessness; whereas, when living rather low, they slept better and suffered less. Some had judiciously left off the wine they had been told to take, because they found it muddled their heads and increased their nervousness.

Such women justify these observations; and their breakfast should

consist of toast bread and butter, with weak tea, coffee or cocoa; and it would be better to make the principal meal at the fashionable lunch hour of two o'clock, in order that their last meal may be light, which can be easily managed, even if the usages of society should require a lady's presence at an eight o'clock dinner table. Dinner should be a plain meal; fish, and white meats, such as fowl, in preference to beef or mutton; more of the crust than the crumb of the bread, and jellies and ice in preference to pudding.

If, on the contrary, all sorts of farinaceous food, pastry and cakes, be indulged in, the natural consequence will be a desire to prolong sleep, a distaste for exercise, and a tendency to congestions, bleedings, inflammations, and gout, or women may become distressingly stout.

THE BEST KIND OF DIET.

A cup of beef tea, or arrowroot, or something equally light, with a biscuit, may be taken for supper; but those want none, who dine late. Ripe fruits and vegetables may be indulged in, to any amount not interfering with digestion. While women who have a tendency to become fat, thus require less food, sleep and exercise than those who continue thin at cessation, both should beware of misinterpreting sensations of internal sinking and exhaustion to which all are more or less subject, and they should not too often seek relief for languor, weakness, or nervousness, in wines, cordials, and spirits, by which only a temporary stimulus can be obtained, at the expense of an increase in the faintness, flushes, perspirations, and nervous symptoms.

The system requires supporting by medicines and regimen, rather than stimulating by spirits; and I have known instances of women who, by a misinterpretation of their sufferings, have gradually so increased their usual consumption of wine or brandy, as to induce habits of intoxication. Effervescing draughts, as well as effervescing lemonade, and ginger-beer, are well indicated; coffee should be made weak or avoided, and tea should be used in moderation.

Patients prolong their sufferings, by ringing at every hour of the day for tea; for ten or twelve cups of strong tea in the twenty-four hours tell injuriously on the nervous system. Some women of the plethoric type would do well to abstain, for a time, not only from wine and coffee, but also from pepper and spices; but, of course, when women are thin and weak, they require more food and stimulants, If, during and after

the change of life, women live as I recommend, they have no further unsettlement of life and fear.

Fatty degeneration begins unsuspectedly in the capillaries, and steadily progresses, till at last health fails without apparent cause, or the kidneys become diseased, or maybe a fatty heart suddenly gives away. Owing to great increase of fat in the abdominal walls, or to the relaxed state of these walls, or to distressing flatulence, the abdomen often becomes very protuberant or pendulous, in which case a light, elastic abdominal belt gives great comfort.

The keeping of the skin in first-rate condition is a great point in the treatment of diseases at the change of life, for it throws additional work on the skin, by which at all times we lose weight. Daily tubbing in warm water is indispensable, and twice a week it is well to remain at least half an hour in a whole bath, at about 93°. Unusually prolonged gentle friction of the skin after the bath is of great use, although we do not precisely know how it relieves the nervous system. When there is a great tendency to perspiration, flannel should be worn immediately over the chemise, and over the night dress, when the patient perspires profusely in bed, otherwise she will be chilled by every change of position.

ADVANTAGES OF EXERCISE.

Exercise is useful at the change of life. 1st. It relieves the congestion of the internal organs, transferring the blood from them to the limbs, and if the late-hour exercises of civilized life are dangerous to all, particularly the sanguine, gentle, regular, and long-continued exercise in the cool of the day is very beneficial.

2d. It has a depletive effect, causing the skin to perspire more, and the kidneys to excrete more urea. It is well-known, that by substituting violent for moderate exercise, the quantity of urea in the urine passed afterwards may be found double that contained in the morning urine, and this may account for strong, plethoric women deriving benefit from exercise, carried to a certain degree of fatigue, as recommended by Auber.

3d. Exercise acts by exhausting that redundant energy which, when unemployed, produces the fidgets, nervousness, and ill-temper. The long walk, or the quick walk, at unaccustomed speed, which was wont to bring on menstruation, in a delicate woman, will, at the change, bring on back pain and feelings of pelvic distress and other symptoms of morbid

menstruation. So very long walks are objectionable, and they are likely to aggravate uterine congestion, piles, and varicose veins.

Driving is, of course, excellent, but horse exercise should be left off till after cessation; indeed, its utility in favoring the menstrual flow sufficiently warrants the discontinuance of the practice while the change is in full progress, for then it is likely to cause flooding, piles, and lucorrhœa. It will be obvious that the preceding remarks do not apply when the change is characterized by great constitutional debility, for walking is often then impossible, and should only be gradually attempted.

It cannot be too often repeated that nervousness, under some shade or type, may be expected at this period, and should be prevented by suiting the habits of life to the changes progressing. It is therefore sufficient to mention that the sufferings of this epoch will be increased by long dinners, balls and operas; for, in addition to the numerous excitements to be there encountered, hot and impure air must be breathed. The susceptibility of the nervous system is shown by the danger of suddenly given bad news, or by the shock of any powerful impression; and I will take my examples from the lower orders, whose nervous system is less excitable than that of their more favored sisters.

CURIOUS EFFECT OF THE MIND ON THE BODY.

M. N. was well and regular up to fifty, when she saw a neighbor's child severely burnt, and a dangerous flooding ensued. Hearing suddenly of the death of her husband brought on a severe flooding in S. L. In A. B. the menstrual flow suddenly stopped at forty-five, on her first realizing that her husband was insane; and in several instances has the news of the sudden death of a husband caused early and sudden cessation.

Perhaps the most curious effect of the mind on the body at this period was lately published in a French journal. A highly nervous lady, aged forty-eight, had ceased to menstruate four years, when she attended a sister during a protracted and painful labor. A few hours after it was over, she was herself taken with similar pains and by flooding for several days. Three days after this ceased the breasts swelled and milky fluid came from the nipples. Boismont and others have likewise seen flooding at cessation produced by strong emotion or a sudden fit of anger.

It is impossible to overvalue the importance of sleep, for long-continued sleeplessness is likely to produce insanity by habitually subjecting the mind to that increased intensity of feeling which takes

effect in the darkness, the silence, and the solitude of night. It is astonishing in how much more lively a manner we are apt, in these circumstances, to be impressed by ideas that present themselves than when the attention of the mind is dissipated and its sensibility in a considerable degree absorbed by the action of light, sound, and that variety of objects which, during the day, fully excite our external senses.

In the first place, sleep should be courted by abstaining from exciting pursuits or amusements between the last meal and bed-time. This will be often sufficient, and will allow required remedies to act well and speedily. It should also be remembered that if cold sometimes causes insomnia, this is more frequently the result of the bad habit of so tightly shutting up bed-rooms that the air becomes foul and hot; indeed, some say this insomnia is always to be cured by sleeping with the window open. Some cannot sleep while the process of digestion is going on, while others sleep better for a light supper, and very bad sleepers should have a cup of beef-tea or milk with a slice of bread and butter, on their night table, for taking one or the other will often give sleep to those who have been tossing about for hours.

NERVOUS IRRITATION AND SLEEPLESSNESS.

Sleep should not be too freely indulged in by those who are stout and who belong to the plethoric type; thin and nervous women, on the contrary, may be encouraged to take as much as nature will give them, even a siesta after meals may be allowed, as sleep is for them the best restorative, and an anti-spasmodic of heroic force. In obstinate sleeplessness depending upon nervous irritation, a warm bath before bedtime is often as serviceable at the change of life as in infancy.

Traveling is a great strengthener of the nervous system, for it places the patient in entirely new circumstances, every one of which makes a fresh call on her attention, solicits her interest, captivates her faculties, and completely leads her from trains of thought to which she had been long and painfully enchained. In addition to this, exercise of various kinds being willingly taken, gives increased vigor to the muscles, and therefore to the brain.

The mind is consoled by the probability of recovering health at some agreeable watering-place; it feels safe under the guidance of medical authority, and resumes peace and tranquility. Indeed, all that has been said in praise of baths, exercise, and the advantage of light-hearted culti-

vation of the pleasures of Nature, rather than of those of society, by women at the change of life, will clearly explain how their combination may be made serviceable for the cure and prevention of disease at this epoch.

I have already said that during the change of life the nervous system is so unhinged that the management of the mental and moral faculties often taxes the ingenuity of the medical confidant. Clever women often lose confidence in themselves, are unable to manage domestic or other business, and are more likely to be imposed on, either within or without the family circle. The disturbance of regular ovarian action during the first part of the change of life sometimes tells unfavorably on woman considered as a moral agent.

PEEVISHNESS AND ILL-TEMPER.

Her mode of dealing with the every-day occurrences of life may betray a want of principle, contrasting in a striking manner with her previous rectitude of conduct and a return to that untruthfulness which may have characterized puberty. There is often unusual peevishness and ill-temper, or fits of ungovernable anger, sometimes amounting to moral insanity. After having lived in a most exemplary manner up to the change of life, women have deserted husband and children for a scamp, while others only stay at home to make it intolerable by their tyrannical conduct, and hate the long-cherished objects of their affection. Some become most miserable pictures of melancholy self-corrosion, sitting in silent and gloomy seclusion, neither loving nor hating, only wishing to be left alone to chew the cud of baleful introspection. Some in the midst of affluence talk poor and indulge a propensity for stealing.

Women have confessed to me that they were obliged to have their children removed for fear they should murder them ; while others commit suicide. Unless there be some strong hereditary taint all such cases of moral insanity can be cured by judicious treatment, and when the change of life is passed the habitual rectitude of moral action often returns. With regard to such cases, the family doctor will have a very difficult part to play. If he has the courage to give wise advice he runs the risk of being dismissed ; if he lets things drift, he is sure to be deservedly abused a little later.

He will have to explain to the patient's relatives that although the nervous system may be, for a time, unhinged, it would be

cruel to consider as confirmed insanity the strangeness of temper, the fitfulness of spirit, the perversion of character, which, after some months, may considerably abate or entirely disappear. He may have to advise the removal of his patient from home excitement and troubles. A married lady may be no longer fit to manage a large family, her injudicious orders may wake up a spirit of resistance that tells painfully on herself. An elder sister at the head of a household may so upset her sisters and dependents, by fits of passion or by weeks of sullen silence, that they cannot help retaliating, which makes her worse. Removal from home is the first thing to be done in such cases.

At no time do women require so much judicious management and intelligent sympathy from friends, and the support of some strong mind in whom faith is placed. It is certainly surprising that a stout lady, in excellent bodily health, eating heartily, should be put out by trifles, be low spirited, fretful and quarrelsome for the slightest worry or mental exertion, and be laid up with a severe attack of cerebrial neuralgia if the exertion be persevered in ; but such cases are occasionally met with, and they may last one, two, or more years, after which the patient may recover her right tone of mind.

GETTING WELL TOO SOON.

Premature efforts to resume the usual active habits of life increase the frequency and severity of these attacks of cerebral neuralgia, and compromise the chance of ultimate recovery. It cannot well be wondered at that the full conviction that age has stamped a woman with its irrevocable seal, should cast a gloom over the imagination ; but a well-trained mind will soon adapt itself to a new state, and take comfort from the knowledge that this epoch proclaims an immunity from the perils of child-bearing and the tedious annoyances of a monthly restraint. When the change is effected the mind emerges from the clouds in which it has seemed lost.

Thankful that they have escaped from real sufferings, women cease to torture themselves with imaginary woes, and as they feel the ground grow steadier under foot, they are less dependent on others, their mental faculties then assuming a more masculine character. The change of life does not give talents, but it often imparts the power to bring out more effectively talents that have been lying in abeyance. Doubtless the subsidence of ovarian action deprives one form of love of those emotional impulses

which gift the passion with surprising energy; but even when at last the heart becomes capable of listening to reason, love still rules paramount in the breast of woman, and whether called charity, friendship, conjugal or maternal affection, it still engrosses the thoughts, and failing all other forms and opportunities of love, religion often takes then a stronger hold, crowning the evening of life with unanticipated happiness.

The natural good sense of many will teach them how the notion that after this period life is not worth living, is a pagan idea, suited to the position allotted to women in Greece and Rome, where they were seldom considered worth more than to amuse men and to bring forth children, but unworthy of women emancipated by Christianity. They might be shown that the importance of their position after the great change may be inferred by the length of life allotted to them after its occurrence, and the singular immunity from disease which is often observed after that period.

CHARMS OF MATURE LIFE.

Besides a vast improvement in health, it must not be thought that the change of life implies the loss of all personal attractions. There is a beauty about childhood seldom making a vain appeal for fostering care; the beauty of youth fascinates; that of mature age excites admiration; but, in many women there is, long after the change of life, an autumnal majesty so blended with amiability, that it charms all who approach within its magic circle. To those fired with ambition, it may be safely said that the home government of society, from the highest to the lowest of our social strata, offers a wide field of employment to women after this period of life.

Many never think of cultivating their minds until they find their influence fading with their charms, and then set about acquiring a less perishable empire by employing this period of freedom in literary pursuits. Others govern with discretion that circle of society, limited or extensive, in which they have been placed, becoming the guides, the supports and mainstays of both sexes in the difficulties of life. Indeed, it would not be too much to say that the discordant elements of society can never be blended without the authority willingly conceded to the combined influence of age and sex.

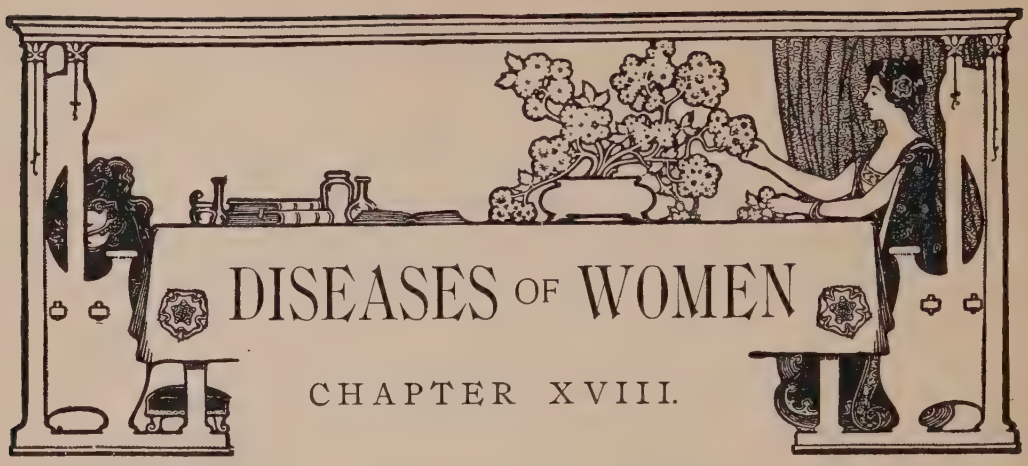
This brings me to the noblest motive of the laudable ambition of woman—that of doing the greatest amount of good to the greatest number of their fellow-creatures. Those who have attained their sunset without

having been granted the anxious, though desirable, vicissitude of wedded life, even if destitute of relatives, or unfortunate in friendship, may still find, in the various forms of unmerited affliction which fill our country cottages, or the hovels of our populous cities, that whereon to expend a warmth of feeling, an energy of self-sacrifice, which the sophisticated state of society has not permitted to flow into their natural and more grateful channels.

The most distressing appeals to medical sympathy are made by those who, when unnerved by the change of life, find themselves left alone in the world, bereft, when most needed, of the solace of filial piety, or the supporting sympathy of conjugal affection. One can only at first respond to such appeals with a sympathizing look and a silent pressure of the hand; but when despair finds vent in tears, lightening the suffering spirit of half its load, sweeping away disquietude and doubt, and the too great bitterness of sorrow, then it may be hinted that time steals even sorrows from the heart, and that after a period of gradual adaptation to new circumstances, there will still remain the calm, pleasant and grateful remembrance of past happiness, whereas it was once thought that life would be intolerable without the daily ministrations of impassioned love.

Here, again, the best mode of affording relief, should strength permit, is to discover some kind of occupation capable of engrossing the sufferer's attention, such as music, gardening, the education of a relative or an adopted child, or work in a school, or some other charity.

The continued friction of social duties will, in time, restore peace and tranquility to the troubled spirit, and every effort should be made, in such cases, to prevent brooding and self-absorption, for the mind may gaze so long upon itself and its inner workings, that the moral vision may become affected with the same kind of disorder which befalls the bodily eye when fixed too long on one color; surrounding objects then lose their real appearance, to shine only with unnatural tints.



DISEASES OF WOMEN

CHAPTER XVIII.

AMENORRHŒA means absence of the menses, and is therefore used as the generic term for the three disorders, suppressed, retained, and delayed menstruation, although each is distinct from the others, having causes and effects peculiar to itself. Many of the symptoms of these disorders are alike, but a close and comparative examination will show the distinctive features of each, the knowledge of which is important to a proper discrimination in the selection of the means to avert them.

DELAYED MENSTRUATION.—By this term might be understood a tardy appearance of the usual flow; but in this connection it is used to mean the non-appearances of the menses at the time of life when it is reasonable to suppose they should be manifested. In warm latitudes this climateric change would occur from the tenth to the fourteenth year, in temperate ones from the twelfth to the sixteenth, and in northern regions from the fourteenth to the eighteenth. When these periods in the life of girls pass away, taking into consideration the respective latitudes, and this process of puberty is not manifested, menstruation has been unreasonably delayed, and becomes, therefore, a subject of great interest and solicitude.

Menstruation may be impossible, as in the case of congenital malformation in which the ovaries, the womb, or the vagina, are absent; or, in cases of disorganization from violent inflammations in which adhesions of the walls of the vagina, or of the mouth of the womb, have taken place; in the case of imperforation of the hymen. These cases are rare, but they do sometimes occur.

The causes more common for this delay are, however, constitutional rather than organic, and generally yield to hygienic and medical treat-

ment. There are instances in which a tendency to a late establishment of this function is hereditary, and others which show the delay to have been brought about by external influences—by inappropriate modes of living, faulty education, etc. But it is often the consequence of a lymphatic temperament, of a scrofulous and weakly constitution, in which vitality is below a healthy standard. The retardation of this natural process will, in these instances, aggravate the condition of the already suffering individual.

When the non-appearance of the menses is due to the absence of the ovaries, or of the womb, the changes in the characteristics of the girl are rather masculine than feminine—in coarseness of features, skin, voice, etc. Such instances, although extremely rare, have been recorded.

DELAY IN MENSTRUATION.

When menstruation is delayed by constitutional or accidental causes, the girl retains all her feminine attributes, but looks immature and awkward; she may experience, monthly, the premonitory symptoms, and yet menstruation not appear. Pain in the back and the groins, general lassitude, deranged appetite, nausea, headache, may be present for two or three days, then disappear, and return at about the same date, the next month. In girls inclined to consumption this delay is very significant; it indicates so little vitality, such a morbid state of the system, as to disable some of her most important organs; it is a condition which portends mischief for the future, and which, when accompanied by a cough, short breathing, hoarseness, sore throat, or pains in the chest, may be taken as something for immediate and careful attention.

Hygienic Treatment.—The treatment should be simply hygienic, unless the general health is so impaired as to require a medical one. For all amenorrhœa, but particularly for that class induced by scrofulous constitution or by a lymphatic temperament, a regimen that is calculated to give tone to the general system is all that is needed.

The girl should be taken from school, from all debilitating influences, such as bad air and poor diet, from the exciting and exhausting scenes of city life, and sent to the country, to the mountains or sea-shore, to breathe pure air, rich in oxygen; take daily exercise and have sunshine and nourishing food. A season of this kind has brought many an enfeebled girl to a state of vigor and health which would before have seemed almost impossible.

Beware of forcing-medicines; of drugs that have been known to perform "miracles." Do not forget that amenorrhœa is not in itself a disease, but the symptom of a disease; that the administering of a drug to enforce menstruation, would, in such a case, be as logical as the attempt to prevent the fall of a house by removing the bricks that crumble from it. Moreover, at that time, when the system labors under some unknown difficulty, a drug may greatly add to the complication.

SUPPRESSION.—Before treating of this topic it may be necessary to explain the pathological difference between suppression and retention. "Suppression" is the failure of nature to perform the process of menstruation; while in "retention" nature has performed the process, but for some reason, probably mechanical, the blood is not permitted to flow out, and is arrested within the chamber of the uterus. As an illustration, suppose a reservoir from which water is expected to flow: at a given time, you open the spigot and no water comes. You at once inquire, What is the obstacle? You examine the reservoir and find no water in it; the usual stream has failed to feed it; it is a case of suppression.

SPECIAL TREATMENT NEEDED.

But if, on examining into the cause of the non-appearance of water, you find the reservoir is full, you come to the conclusion that, the stream having supplied it, the obstruction is in the spigot; it is a case of retention.

The failure of an organ to perform its functions should not properly be regarded as a distinct malady, requiring special treatment; but in view of the importance of the function of menstruation, and the quantity of fluid excreted, Suppression may become the immediate cause of grave disease, and therefore, requires particular attention.

The cause of suppression may be divided into pre-disposing and accidental. The pre-disposing causes depend upon the constitution of the individual, her organization of the uterine organs, temperament, and degree of sensibility of the genital organs. When a pre-disposition exists, immediate causes will act as auxiliaries in producing suppression, and these are: poor nourishment, the use of acid beverages, a sedentary life, too much sleep, unhealthy habitations, over-work, late hours, or the use of articles of a stimulating nature, as rich viands, aromatic substances, and alcoholic fluids; also, moral affections, such as sadness, grief, disappointment, etc.; debilitating maladies anterior to the suppression, such as

hemorrhages and other excessive evacuations; the use of astringent medicines, and the repression of the calls of nature.

Among the accidental causes we find sudden exposure to cold and humid air, when the body is over-heated; partial or general immersion of the body into cold water, icy cold drinks, abstraction of blood, either professionally or accidentally; a wound, a blow, a burn, a fall, an excessive pain, a strong odor, a great mental shock, powerful drugs, an irritated stomach.

Any of these accidental causes, occurring at a time when menstruation should appear, might induce suppression. The maladies following a suppression from accidental causes are generally acute, such as fevers, inflammations, etc.; while those resulting from simple pre-disposing causes are likely to be gradual, chronic, but progressive.

LIABILITY TO SUPPRESSION.

The liability to this suppression varies in different women; those who are pre-disposed to it through an inherited idiosyncracy, or who have incurred the habit, have been subjected to a suppression by the slightest cause, such as even the change of linen; while those who are not so pre-disposed have exposed themselves to all the above mentioned causes with impunity.

Suppression is generally attended by the following symptoms: heat, heaviness or pain at the small of the back, extending sometimes to the end of the spine, and to the groins. The last vertebra may be so sore as to make it impossible to retain a sitting posture. Not unfrequently the pains of the abdomen are short and shooting, attended by swelling and tightness; the breasts also, sympathetically affected, become tumified and painful, and yield a white fluid often mistaken for milk.

When the suppression is long continued, the whole system responds to the unnatural condition; the appetite is lost, or replaced by a desire to eat strange things; the irritable stomach rejects food, or is troubled by nausea; the heart, oppressed, is subject to palpitations; the head is full and heavy, and oftentimes excruciatingly painful; the ears ring with strange sounds; the intestines, in their turn, are irritated, producing diarrhœa or dysentery; the bladder, the next neighbor to the womb, shares in the general derangement, causing frequent and difficult urinations.

This condition finally induces general lassitude, sadness or malaise.

Women thus affected give external evidence of their condition by their faces becoming pale and puffed, their flesh flabby, their movements languid; they yield easily to moral influences, and become morose or melancholy. This debilitated and depraved condition makes them prone to neuralgia, hysteria, hypochondria, glandular enlargements, eruptions of the skin, etc.; to dropsical effusions, partial or general, manifested in the eye-lids, in the feet, in the pleura—the membrane around the lungs, in the pericardium around the heart, or in the entire skin surrounding the body.

The severest symptoms are more liable to occur when the suppression is sudden, and in subjects of lymphatic temperament; also in those of nervous and sanguine temperament, who have been subject to profuse menstrual discharge before the accidental suppression.

The indispositions that follow suppressions generally diminish in intensity, or entirely disappear, during the intervals between the menstruating periods, but are prone to increase during the time that menstruation should appear.

CAUSES AND DURATION.

The effect of suppression depends upon its causes and duration. When induced by slight causes their removal is sufficient for the restoration of normal menstruation. Again, it sometimes happens that the woman's system adapts itself to a continued suppression without incurring serious consequences.

Yet the consequences are generally serious, and if continued beyond what might be reasonably expected from an accidental cause, medical counsel should be secured without delay.

Nature, oppressed by the retention of a fluid that should be monthly eliminated by the womb, attempts other means to obtain relief; thus hemorrhages of the nose, of the lungs, of the hemorrhoidal veins, have periodically occurred in place of the more natural process of menstruation; such hemorrhages are called "vicarious."

Menstruation is suspended during pregnancy of course. The exceptions of this rule are so few and rare as to need no special mention here.

SELF-EXAMINATION.—One cannot look at the array of symptoms mentioned to describe this disease without being appalled at the possible consequences of suppressed menstruation. We trust that the description will not discourage the reader from examining for herself the condition in which she may be; on the contrary, we hope that her interest has been

awakened in a subject the knowledge of which may give her health, and protect her from disease.

She should commence her inquiry by contrasting her former condition with the present one, and ask: "Am I of a scrofulous or lymphatic temperament? was my usual condition a feeble, languid, or torpid one? was my appetite good, and my digestion normal? was my menstruation regular and sufficient? have I had any serious illness of the stomach, lungs, bowels, or spine? has anything ever occurred to cause me poignant grief or mental shock? is my disease traceable to any moral or physical affection?"

CONTINUED SUPPRESSION.

Supposing her to be able to answer No, to these queries, the question still arises: What suppressed the menses? Did they stop suddenly; or fail to come when expected? Allowing an affirmative answer to either of the last, her endeavor should then be to discover the cause. Has she had a fright? Is she nursing a grief or disappointment, has she exposed herself to wet, or to sudden cold, has she over-worked, etc.? Satisfied with her own answers to these, then the question should arise in her mind: What will be the probable result of this suppression? The answer will depend upon whether the suppression is accidental or habitual. If accidental, menstruation may return when due without any ill-consequence; if habitual, the consequence may be very serious.

Amenorrhœa is not necessarily a grave malady, unless complicated with great constitutional disturbance, or dependent upon some remote disease; isolated and recent, it may prove but a delay. Having taken all the above into consideration, having made a satisfactory examination of her own condition and determined the causes of the suppression, the patient may be able to decide whether it is in her power to obviate the causes and remedy the evil, or whether she should give herself up to the better judgment of a medical counselor.

Hygienic Treatment.—The prescription of drugs should be left to the medical attendant, who alone is capable of prescribing for each individual case, every one having a decided individuality. Especial caution must be here given against the use of menstrual nostrums loudly proclaimed to "do the business" at short notice without failure. It is particularly against newspaper advertisements of miraculous cures that we warn the patient. Respectable physicians never advertise their treatment or themselves.

The quack's circular may describe your case precisely, because such cases are common and well described in books; that description which has attracted your attention, which has been taken from estimable authors, is the trap into which he desires you to fall. If you need medicine, apply to a physician well known not only for skill, but integrity.

Again, you should be cautioned against any "panacea" of old women; however honorable their intention, they are not able to prescribe for your case. Forcing-medicines may prove most disastrous; in forcing the womb to menstruate, inflammations, already existing, may be so aggravated as to put life in danger. A properly regulated regimen will not only prevent amenorrhœa, but in many instances cure it.

REMEDIES OF PROVED VALUE.

Simple cases of suppression, originally depending upon debility and a lymphatic temperament, and occasioned by poor nourishment, ill-ventilated and damp apartments, should be treated with a generous diet of roasted or broiled meats, wines, etc.; the patient should practice dry frictions over the body, dress warmly, and take moderate exercise. A trip to the mountains or to the sea-shore, a few rides on horseback, a wholesome, fortifying diet, have often been enough to bring roses to the pallid cheeks of girls. In another case, if the subject is of strong sanguine temperament, nourishment should be of the lightest kind, beverages of water, and rest imperative.

It should be remembered that the tendency of menstruation is to reappear; that in due time nature makes the effort to re-establish it; it is then, therefore, that the means to assist it should be employed, that foot- and hip-baths of hot water are particularly efficient.

Suppression induced by exposure to cold or dampness, or by checked perspiration, should be treated with warm drinks while in bed, for the purpose of restoring the action of the skin. When caused by mental impressions, as anger, grief, fright, jealousy, etc., a general warm bath will quiet the nervous system, and establish harmony between the relative functions of the mind and the bodily organs.

If the suppression is accompanied by an excess of pain, warm hip-baths, local application of hop poultices, hot, will be very useful. When suppression resists all treatment, a change of climate, a long journey by sea, may prove efficacious.

When the condition is dependent upon moral causes, great sagacity

will be required on the part of the parents and the medical attendant, for as long as that state exists all the drugs of the pharmacy will be used in vain; but journeys, change of scene or surroundings, pleasurable distractions will be the only means of restoring health to the patient.

The use of spring waters, particularly the ferruginous (partaking of iron), and sea-baths may, however, prove of great benefit to persons of lymphatic temperament. In cases where mental exaltation in affairs of love is the cause of the suppression, marriage has proved permanently curative.

Such is the treatment in all simple cases; when complications with remote maladies of a serious nature exist, the case should be referred to a physician.

RETENTION.—We come now to consider cases of Retention. The pathological difference between retention and suppression has been described above. The ovaries and the uterus have performed their functions, but the blood exuded within the chamber of the womb finds no exit. This is a dangerous and painful malady, and if no means are ready at hand to relieve the womb of the blood collected therein, even life may be put in danger.

DUE TO ORGANIC CAUSES.

The causes that may induce such retention are various and peculiar; they may be organic, as, when the mouth of the womb is closed by adhesions, and when the hymen is imperforated; instances are on record where the vagina was even found entirely absent. Such cases of adhesion however, are exceedingly rare, but may be induced by repeated inflammation of those organs, and by the treatment with caustics. When the closure is complete, there can be no flow whatever; but when incomplete, the flow is scanty, slow, difficult and painful.

Retention however, is generally induced by spasmodic closure of the womb, which yields easily to proper treatment. When the entire menstrual fluid is retained, the womb becomes distended and very painful; the distension increases every month, until, if not removed, it may burst the womb itself. Flexions of the womb (that is, the womb bending upon itself,) the pressure of any tumor, may induce complete or partial retention.

The symptoms of retention are like those of painful menstruation, but greatly intensified; the pains in the lower part of the abdomen are

intensely severe and acute; they are of a forcing, bearing-down nature, pressing towards the bladder, causing frequent and difficult urinations. Under this great stress the nervous system becomes excited, producing chills, headache, hysteria, and sometimes even convulsions.

It is evident that the nature of retention is so grave, that none but a skillful physician is qualified to treat it. When retention is the consequence of spasmodic closure of the neck of the womb, and the patient has been so informed by her physician, very hot hip-baths, or a drink of warm water, such as would produce vomiting, will relax the muscular fibers, and give prompt relief to the patient.

It is scarcely needful to say more regarding this subject, as every case requires the most thorough investigation, and the most careful treatment of a physician.

SIGNS OF CHLOROSIS.

CHLOROSIS ("*Green Sickness.*")—Chlorosis is not properly a disease of the generative organs of woman, and would have no place in this volume were it not that amenorrhœa is invariably connected with it. It is a disorder characterized by intense paleness of the skin, lips, and the lining membrane of the eye-lids; it is a paleness having a greenish hue, (from which the disease takes its name); at times the color is yellow, when it is often mistaken for jaundice. The noticeable and peculiar paleness of the lips and of the membrane over the eye-ball are almost infallible evidence of chlorosis.

Pathologically, the disease is distinguished by a lack of red globules in the blood, which seems as if turned to water; and the transfusion of that water through the veins into the cellular tissue causes dropsy of the face, of the feet, or of the whole body; it is this dropsical condition that gives the "puffy" appearance. This disease, when continued, gradually weakens the patient, whose system under the general anæmia becomes deranged.

The appetite is lost or perverted to a desire for strange things, such as slate-pencils, chalk, dirt, salt, charcoal, pepper, vinegar, pickles, lemon juice, etc.; then a sensation of weight oppresses the stomach, digestion is retarded, giving rise to evolution and eructation of gas; the respiration becomes labored, and palpitations of the heart are induced by the slightest exercise or mental excitement. This low condition predisposes the patient to neuralgia, which may affect the head, the neck, the eyes, the back, or any part of the body.

Chlorosis consists, essentially, of a watery state of the blood; the red globules being wanting, death-like pallor and weakness ensue, the menstrual and fecal discharges are suppressed. It is useless to discuss here the various theories advanced by pathologists regarding the exact nature of this disease; they disagree on this point, but concur that the almost constant absence of menstruation during the course of the disease is not the cause, but the consequence.

Chlorosis generally occurs at puberty, just before menstruating, although both married women and those who have menstruated have been affected by it.

A young girl in excellent health and color suddenly loses the roses of her cheeks, becomes intensely pale, loses her vitality, is tormented by notions and apprehensions; her cherry lips and the white of her eyes become greenish white. Soon her stomach shows irritability, refuses food or tolerates it with difficulty. Daily she grows weaker and more nervous, sleeps little and has frightful dreams.

Now and then she complains of neuralgic pains in various parts of the body; she is moody, sensitive, hysterical. Spasms, convulsions, St. Vitus's Dance, epilepsy, may overtake her; the menses are suppressed, but she will probably be troubled with bleeding from the nose, of watery blood. Her heart jumps at the slightest cause; her breathing is oppressed. She has chlorosis.

This disease is generally curable, particularly when it does not occur in women of vitiated constitutions, and who have not been exposed for a considerable time to deprivation of healthy diet and pure, dry air. The danger of this malady lies in the organic diseases that may follow. Some of which are: valvular disease of the heart, dropsy, paralysis, hœmorrhages, consumption. The appearance or reappearance of the menses is the most reliable sign of the return of strength and health, and of a complete recovery.

The causes that predispose to this affection are strong mental emotions, fright, love, sexual excitement, masturbation, insufficiency or inferiority of food; residence in damp, close, unlighted, unventilated localities.

DISEASES OF WOMEN.

(CONTINUED.)

CHAPTER XIX.

BLOOD discharged at one menstrual crisis varies in different women, and sometimes in the same subject; yet every woman has a knowledge of her average of flow, either as regards quantity or duration. When she discharges more in the same length of time; when her periodical flow is prolonged beyond her usual time; when it recurs oftener than once a month, and the amount passed away in the month's cycle is beyond the usual quantity expected from the individual, the woman is said to be afflicted with menorrhagia.

Naturally woman menstruates once in every four weeks, allowing a few exceptions who menstruate oftener without ill-consequences; the quantity lost each time is estimated to be about six ounces; the usual duration four or five days. Suppose, then, a girl to menstruate twice a month, each time a regular quantity; another, to menstruate in a regular manner as to periodicity and length of time, but secreting a much larger quantity; another, flowing not immoderately but continuously for ten or twelve days: it becomes evident that in each and every such case the loss of blood is in excess of the usual habit, requiring attention and treatment lest the general health become seriously affected from the unwonted drain.

In menorrhagia the quantity must be an unusual one for the person complaining, as some young women may discharge ten or twelve ounces regularly and yet be in a normal condition; while in others a discharge of eight or ten ounces would be considered unusually superabundant, and therefore menorrhagic. The normal individual quantity depends upon individual constitution and temperament. There are women who also naturally menstruate twice a month, or once in three weeks, but in quan-

tities that, if added together, do not yield a total in excess of what is natural and usual; hence not hemorrhagic.

An inordinate flow occurs generally in women of sanguine temperament, whose hearts' impulse is strong and whose circulation is free. This temperament predisposes to determination of blood, and it is therefore reasonable to suppose that the womb, under the seasonable stimulus, may receive and discharge an abundant quantity of menstrual fluid. It is seldom, however, that an excessive flow occurs, unless a debilitating cause exists. The sanguine temperament, exuberant in action, may overreach its limits of vital powers, and terminate in debility.

Again, where the passions are strong and exposed to over-excitation, reflex action might determine blood to the generative organs and induce congestions that nature relieves by a profuse menstruation.

HOW THE SYSTEM IS WEAKENED.

Luxury, indolence and indulgence enervate the human system, however strong; and, therefore, it not seldoms happens that a person of sanguine temperament is comparatively weaker than another who manifests less exuberance of constitutional vitality. Some morbid stimulus has exhausted the vital powers, destroyed the tone of tissues, induced anæmia, and relaxed the walls of the womb, on account of which the blood flows without restraint. Therefore, although a woman of sanguine temperament may be expected to discharge a larger quantity of menstrual fluid than one of a lymphatic temperament, yet, when the quantity is increased much beyond the habitual flow, a cause for the abnormal condition must exist which should be investigated and removed.

Menorrhagia is common also among women of nervous, irritable temper; in those who are corpulent and of indolent habits, and those who live in hot climates or who occupy rooms having a high temperature; it is also an hereditary predisposition; and, whatever its source, it is generally aggravated during the summer season.

Beside the constitutional tendency, there are accidental causes which may induce immoderate menstruation, among which are the following: exposure to excessive heat or cold; violent exercise, particularly on horseback and over rough roads; abuse of medicines intended to force menstruation; abuse of stimulants and of the pleasures of the table; a fall; lifting weights; mental excitement, such as fright, anger, jealousy, love, ambition, etc.

Reliable authorities insist that menorrhagia is invariably due to irritation and inflammation of the womb or ovaries; that the disease is local and not constitutional; that the morbid sensitiveness, the weakness, the moral and mental disturbances present in this disease are not causes, but effects of the excessive loss of vital fluid and of the uterine irritation communicated by reflex action. Others, quite as reliable, honestly differ from the above, and assert that in many instances this malady is induced, not by local, but by constitutional causes. We are of the opinion of the latter, and advise the patient to consult the medical man, who, upon due investigation, will determine the causes affecting the special case brought to his notice.

CAUSES OF HEMORRHAGE.

Hemorrhage should not be confounded with menorrhagia, although the latter implies a hemorrhage, both meaning a flow of blood; but menorrhagia is associated with menstruation, while simple hemorrhage is not. In other words, menorrhagia is either a too profuse, too prolonged, or too rapid recurrence of the menstrual flow; while hemorrhage may occur at any time from the womb, the lungs, etc., and from accidental causes.

A hemorrhage of the womb may be a consequence of a blow, the application of a sharp instrument, pregnancy, labor, or abortion; also the presence in the womb of a tumor or some destructive disease as ulceration or cancer; it obeys no law of periodicity, but occurs at irregular periods and continues as long as the local lesion remains unchecked by active treatment; and while it may be slight and harmless, it may also be profuse and immediately dangerous. Menorrhagia may, in being prolonged and repeated, slowly deplete a person of blood, and thus withdraw so much of the vital force as to put life in peril; but the process will be gradual, and afford time for repair, for treatment, and for protection against collapse.

Menorrhagia may be active or passive, even nervous, or spasmodic. The active kind results from an excess, the passive from a deficiency, of vitality. In the first, plethora is made apparent by the animated face, the strong, full pulse, the highly colored cheeks, the brilliant eyes; also by a liability to congestive headaches, feelings of general heat, rush of blood to the head, heaviness at the back of the stomach, heat and itching of the vagina.

The second is marked by the lymphatic appearance and by paleness, anæmia, puffiness, indigestion, want of appetite, cravings for strange things, general debility, slow and weak pulse. The flow of the former will be of clear red blood, as if coming from a cut, while that of the latter is of lightly colored, watery blood.

In a plethoric woman, an active flow may prove beneficial, and remove all the unpleasant feelings she complained of before its occurrence; but in a lymphatic, debilitated woman, even a passive flow will augment her weakness, and if continued induce fainting, dropsy, obscuration of vision, buzzing in the ears, dizziness, palpitation of the heart, discoloration of the skin, hysteria and possibly convulsions.

The above should be sufficient to warn women that menorrhagia may be so complicated and grave as to require the counsel of the most skillful physician. A general and local examination should be made, so that no false assurance should lead the patient into fatal indifference, or add a useless anxiety to the mental burden already oppressing her.

REMEDIES THAT ARE RECOMMENDED.

Hygienic Treatment.—The hygienic treatment will depend upon constitution and temperament. In sanguine temperaments excited by mental causes, quiet, rest, light and unstimulating food should be enjoined; the moral disturbances removed. Entire change from the locality, the scenes and the companionship that excited the mind and the senses will prove highly beneficial. If mental labor, in the transaction of business, in the attainment of professional or literary success, in study, in gratifying ambition or pride, has been the cause, a complete remission or intermission of those pursuits will be necessary.

The mind must rest adequately to its labor, else a nervous exhaustion will follow, that will lower the vital powers of every organ of the body. A vegetable diet and acidulated beverages lessening the red globules of the blood and diminishing the over-action of the heart, will be found particularly useful in the plethoric persons.

When menorrhagia is induced by anæmia, debility, constitutional or otherwise, or in consequence of malarial fevers or of diseases of long standing, the regimen recommended in amenorrhœa will be applicable to it. Moderately cold hip or entire baths are generally invigorating to the feeble, particularly if quickly taken and followed by brisk frictions. They are useful also to women of sanguine temperament, who may

remain longer in the cold bath, thus permitting abstraction of heat. In either case, care should be taken not to plunge into a cold bath immediately before, during or immediately after menstruation.

Menorrhagia depending upon inflammatory or structural diseases of the womb requires such positive and specific treatment as would be out of place in a volume of this character, and it is therefore properly referred to the care of the physician, who should be made acquainted with every detail connected with the case to enable him to prescribe with intelligence and skill.

DYSMENORRHŒA (PAINFUL MENSTRUATION).—The suffering connected with this disorder is of the most intense and acute character; and reflecting that a girl thus affected is monthly condemned to its recurrence, each time prostrating her on a bed of agony, the hardest heart would deplore her destiny.

CAPACITY TO ENDURE PAIN.

But, probably, only the sufferer herself can realize that three or four days of writhing, wringing, cutting abdominal pains, returning once a month, is a penalty too severe, too cruel to be inflicted on a human being, were it even intended as a retribution for crime; and when the torture is inflicted on an innocent girl, heart and mind rebel against the castigation.

Yet thousands of unmarried women periodically bear this torture, smiling during the short intervals of ease that come between the spasms that seem to rend them. There is a pain-enduring capacity in woman that certainly man knows not of; in the throes of labor she smiles in anticipation of gladness, in the racking pains of dysmenorrhœa she only prays for the hour of relief. It is that struggle between the moral and the physical from which woman comes out a heroine.

But it is on this very account that our best efforts and greatest sympathy should be engaged in protecting and relieving her from such terrible fate. It is to be regretted that often the most energetic means have failed to relieve; this failure is, however, generally due to a misconception of the origin and cause of the difficulty, and must be incurred whenever the trouble is treated as an independent difficulty while it is but a symptom of a deeper and remote disease.

Dysmenorrhœa is due very generally to inflammation or congestion of the ovaries or womb, yet it may be of neuralgic or rheumatic origin, or due to nervous irritability of the womb, the spasmodic strictures of its

mouth interfering with a free flow of the menstrual fluid, causing partial retention and giving time to the blood to coagulate, each coagulation having to be thrust out by the contractile force of the womb.

Menstruation suddenly suppressed by any accidental cause may become very painful and assume the form of dysmenorrhœa. During a high state of inflammation plastic lymph is sometimes exuded in the womb, organizing a pseudo-membrane like that of diphtheria or croup in the throat, passing off entire or in shreds, with the keenest pain. This has been styled "membranous dysmenorrhœa."

Malposition or flexion of the womb, tumors, or any mechanical obstruction may render menstruation difficult and painful.

Women of sanguine and nervous temperament are predisposed to dysmenorrhœa, particularly when they indulge in indolence, rich food, ardent spirits, wines, the pleasures of the senses; or are exposed to mental impressions of an exciting character. This disease affects especially unmarried women, and marriage has often cured the disorder.

AILMENTS OF OTHER ORGANS.

The direct or accidental causes are manifold, for almost any shock to the system may induce dysmenorrhœa in subjects predisposed to it; but moral disturbances, sudden transitions from heat to cold, or *vice versa*, any morbid affection of other organs, are pre-eminent causes of dysmenorrhœa.

The symptoms are of a very violent character; they generally commence three or four days before menstruation, increasing in intensity until the flux is fairly established; the erect posture aggravates them. They are as follows: pain in the back extending to the groins, and in the abdomen over the whole region of the womb as high as the naval, sometimes radiating down to the thighs. The pains gradually assume the spasmodic and colicky form, until they become unbearable; the blood flows by drops and sometimes in little clots, or is accompanied by membranous shreds.

In highly nervous temperaments the excitement is so great as to induce hysteria and even convulsions. Under this excitability of the generative organs the breasts swell and become painful; gases are evolved in the abdomen, and a sensation of heat is felt in the vagina and the soft parts. The bladder sympathizes and urine is passed often, but with difficulty and a sensation of scalding. These symptoms may be premoni-

tory and disappear as quickly as the flux appears; but more often, if the flow is not free, they increase for twenty or thirty hours, and may not end till the end of the discharge.

The flow is generally scanty, but may be profuse; in the latter case, however, intermissions of suppression occur, during which the pains return with the usual severity; this is especially the case in women of highly nervous organization, susceptible to every impression. Generally a free flow relieves the pains as if by magic. In very young girls the womb may not be sufficiently developed, in which case the disorder cannot be expected to be cured until that organ is grown to adequate proportions. The natural cavity of the womb is very small, not retaining more than fifteen or twenty drops of the fluid, so that it may be easily comprehended that a very small quantity of blood may cause such distention as to induce excruciating pain.

THE OVARIES ARE INVOLVED.

When dysmenorrhœa recurs for many months and becomes habitual, it may gradually induce such disorganizations of the womb as to cause it to become permanently diseased, unless properly treated.

Authors have differed regarding the causes of dysmenorrhœa; we will quote one, who says: "Ordinarily, the primary and true seat of the morbid process, known as painful menstruation, is to be sought for in the highly irritated, congested, or inflamed condition of one or both ovaries, which condition is induced under a great variety of circumstances: from application of cold, from falls upon the knees or sacrum, from horseback riding, dancing, or long, fatiguing walks just previous to, during or immediately after the menstrual flow, from great muscular effort, as the lifting of heavy weights, from tight dresses, corsets, and the various bands and strings around the waist, preventing a free returning of the blood from the pelvis; from retention or suppression of the catamenia (menses), from gouty or rheumatic habit, from solitary practices, etc.;" to which we add: from constipation, from mental excitement (particularly of the affections), from anger, fear, disappointment.

To give a clearer view of this trouble in all its phases, we will divide it into classes, and give the principal characteristic of each; we hope thus to enable the unprofessional reader to discern its several forms.

Simple Dysmenorrhœa. This is an uncomplicated form of the disorder, called "nervous" or "neuralgic." It is due to the morbid sensitive-

ness of the uterus or ovaries, and aggravated by mental excitement, exposure to heat or cold, over-fatigue, rheumatism, overloading the stomach, constipation, etc. Nervous-sanguine temperaments, girls subject to neuralgic or rheumatic affections, are more liable to it. The distinctive symptoms are found in the great sensitiveness of the uterine regions; the girl cannot be touched by the hand without an increase of pain, and even the weight of her clothing seems unbearable.

At the approach of the menstrual period, sensations of fullness, weight and bearing down are felt at the vulva, and pains supervene which radiate to the bladder, the rectum and down the thighs. As the flow commences, the pains become more intense and spasmodic, often amounting to actual cramps, and simulating labor-pains. Women have been heard to exclaim, "I would rather give birth to a child than be subject monthly to these pains." Usually, after twelve or fifteen hours, when menstruation becomes fully established, the pains abate, passing gradually away, to the great relief of the patient; but it does often occur that they last during the whole course of menstruation.

CONDITION DURING INTERVALS.

During the intervals, however, she is perfectly well, the parts not unnaturally sensitive, which is proof that there is no local inflammation. The suddenness of the attack, its severity aud paroxysmal character, its recurrence month after month without affecting the general health, should be accepted as evidences that the case is one of irritability of the uterus, and of a neuralgic form.

Accidental Dysmenorrhœa. This is also one of the simplest forms that may occur occasionally from hygienic errors on the part of the woman immediately previous to, or during, menstruation. Overfatigue, excitement, exposure to cold, may at such a time induce painful menstruation, which does not recur at the following period.

Congestive Dysmenorrhœa is generally distinguished from the others by the clots which pass during menstruation. Congestion is a rush of blood to the womb, and may be compared to the rush of blood to the head, causing apoplexy. The veins and arteries are engorged, causing all the pains of dysmenorrhœa with all the concomitant nervous symptoms which are very severe, but generally of short duration. Vomiting, convulsions, hysteria, may occur during the stage of congestion; but as

soon as the blood flows sufficiently to relieve the overdistended vessels the symptoms disappear, and the patient is well.

Inflammatory Dysmenorrhœa. This is not a constitutional dysmenorrhœa, but the result of an inflammation of the womb and ovaries. It does not commence at puberty, like the constitutional, but occurs at any time in married or unmarried women, when that morbid condition of the womb or ovaries exists. In this form the sufferings continue during the whole period of menstruation, leaving the region tender even after it. The whole system sympathizes with the local inflammation, and languor and anæmia follow, giving a general and continued evidence of physical deterioration. It is in this form of dysmenorrhœa that the *pseudo-membrane* is formed, passing out of the womb in shreds with excruciating pains. There may be inflammatory dysmenorrhœa without the formation of this membrane, but the presence of the membrane is always proof of inflammation. Inflammatory dysmenorrhœa is generally attended by fever.

SYMPTOMS TO BE CONSIDERED.

Mechanical or Physical Dysmenorrhœa. This depends upon organic imperfection of the uterine neck, such as constriction; deformities of structure, or malposition of the womb; thickening of the lining membrane induced by previous and repeated inflammations; adhesions; tumors; and finally, closure of the vagina or imperfection of the hymen. The symptoms of this form do not differ in any high degree from the others, and it is therefore difficult to determine the form except by the close examination of the medical man. A tumor, if of any size, may be detected by the enlargement of the abdomen that does not subside after menstruation.

The malposition of the womb may be suspected, if pain in the back, sensation of bearing down, desire to pass water often, and passing it with difficulty, or constant desire to evacuate the rectum without doing so, or when doing so passing a small, hard, compressed stool, continue to occur during the intervals between the menstruating periods. And the entire closure from imperforation of the hymen, or adhesions of the vagina or womb, may be prognosticated, if all the violent pains of periodical dysmenorrhœa occur, without any discharge of menstrual fluid.

Authors give many varieties of dysmenorrhœa and do not always agree as to its pathology, or in the classification; but the above may be sufficient to warn girls, that dysmenorrhœa may be or may result in

formidable disease, and that, therefore, it needs their earnest efforts to prevent even the simplest forms; and in difficult and complicated cases, their good sense should enable them to conquer their aversion to calling upon the physician for advice and treatment.

HYGIENIC TREATMENT.—It must be evident even to the common reader that this disease, except in its simplest form, requires medical and surgical treatment; and there is no disease where the rules of hygiene should be more strictly observed than in this.

For young girls every means should be exercised that will assist in a proper and regular establishment of this function; hence, when this process begins with pain, they should be taken from school and all places of occupation or confinement, from exciting scenes, and from mental labor; the ambition to excel even in ordinary studies should be checked; their life should be vegetative. Attendance at balls and theatres should be strictly forbidden, and the diet be of the blandest character and in conformity with the temperament. And, above all, care should be taken that an evacuation of the bowels be obtained every day, constipation being not only an aggravation but often the sole cause of the disorder.

HOW MANY PERSONS OBTAIN RELIEF.

It is very common for girls to seek relief from the suffering in intoxication. This remark may seem extravagant, yet we have known girls to take two ounces of pure brandy or whiskey at one dose, and declare that that was the only means by which to secure relief. This practice is dangerous—first, because if it is a case of inflammatory dysmenorrhœa, the stimulant aggravates the disease; secondly, if it is of the mechanical form of difficulty, the stimulus is useless; thirdly, the habit of drinking may be acquired.

There is no doubt that in some instances, and particularly in the neuralgic or simple forms, stimulants relieve; yet it would be greatly to their advantage if women should confine their efforts during the intervals of ease to the observance of every care to prevent the recurrence of the disorder, and leave the active treatment to the physician.

Opiates are also resorted to for the relief of this painful trouble, which are no less dangerous than stimulants; and we dare assert, from our personal knowledge and that gathered from other physicians, that drunkenness and opium-eating in women are habits often contracted from the habitual recourse to these baneful "remedies" during the pains of

dysmenorrhœa. We regret to say, moreover, that physicians have carelessly encouraged those habits, thoughtless of the disastrous results, when they should instead have studied their cases thoroughly or turned them over to more skillful professional brothers if their own ability failed them.

Moderation in all things, should be the rule of all women suffering from dysmenorrhœa. Rheumatic and neuralgic patients, as well as those of a lymphatic temperament, should dress warmly, and never be exposed to dampness or drafts of cold air; those of a sanguine temperament should make frequent use of cold baths, taking the precaution to follow them quickly by brisk and hard dry rubbing; but nervous and lymphatic temperaments will find the warm bath more conducive to their comfort.

KEEPING THE BODY AT REST.

During the three or four days just preceding the menses the body should be kept at rest in a reclined position, and every night a hot hip-bath should be taken before retiring. During the access of pain or spasms hot hip-baths, application of hot poultices to the abdomen, hot applications to the feet, mucilaginous—such as hot decoctions of hops, marsh-mallow, chamomile, etc.,—and vaginal injections of warm water will afford relief. If the bowels are not free, they should be moved by warm enemas of water. No iced water, or very cold drinks of any kind, should be taken immediately before or during menstruation; a mouthful of cold water has in many instances brought back all the pains that had been relieved by proper treatment.

Leucorrhœa ("Whites")—This disease, although not dangerous to life, is one of great discomfort and general debility. It consists of a flow of mucus from the genital organs, which varies according to the constitutional disturbance, and the locality and extent of the inflammation, being at times white (from which it takes its name), again bluish, yellowish, or red with blood; at times inodorous, again fetid. The seat of the irritation or inflammation may be in the walls of the vagina, the neck of the womb, the lining membrane of the womb itself, or the fallopian tubes.

Leucorrhœa being a symptom of some constitutional disturbance rather than a disease, has been by medical men classified according to its original causes; but in a work intended for the lay rather than the professional reader, a pathological classification would rather burden than assist in the compreheusion of its description. As a principal cause of

leucorrhœa we must note the constitutional inheritance as found in lymphatic subjects, ill-developed and feeble, generally known from their want of muscular vigor, their pallid faces, soft flesh, weak digestion, morbid and melancholic tendencies. Girls of such constitutions may manifest, even during infancy, leucorrhœal characteristics, probably excited by irritations induced by dentition, or by the presence of worms.

External causes predisposing to this malady are sometimes found in the water of certain mineral springs, in the use of new beer, unripe fruit, milk diet, tea, and *cafe-au-lait* (coffee with milk).

This last article of diet has, by a French author, been declared a very common cause of leucorrhœa among French women, who make daily use of it; the same author asserting that in cases where women refrained from the use of that stimulant they were permanently cured of the annoying discharge. Local irritations from the applications of instruments, the wearing of pessaries, or solitary habits of a vicious character have been found to be sources of this disease.

EXPOSURE TO HEAT OR COLD.

Not unfrequently leucorrhœa is induced by the suppression of some other malady, as a cutaneous eruption, rheumatism, gout, the suppression of a hemorrhoidal flux, a diarrhœa, or the milk in nursing women; the healing of an old ulcer, the sudden check of a chronic cough.

Again, and more often, it is the result of exposure to either heat or cold, insufficient or excessive exercise, dampness of the atmosphere, wet feet and damp clothing, badly ventilated apartments, insufficiency of light, malaria, poor nourishment, prolonged warm baths, medicated injections, obstinate constipation, rough travelling, riding a hard-trotting horse, inflammation of the womb or ovaries, uterine displacements or ulceration, abortions, and drugs intended to force menstruation.

Fevers, and particularly miasmatic and scarlet fevers, measles, and smallpox often terminate in leucorrhœa, which is then called critical, and regarded as a favorable symptom.

Of all the infirmities that afflict women, leucorrhœa is probably the most common; it affects women of all ages and of all classes, but particularly during the period of menstruation. It is, moreover, an intractable disease, difficult to cure, and one against which physicians have often exhausted their skill and patience in vain.

The probable reason for their failure may be that it has too often

been treated as a disease *per se* (by itself) rather than as a symptom of disease. No intelligent person could attempt to treat an expectoration as a disease, and prognosticate that when the expectoration ceases the disease is cured. The vagina and uterus are lined by the same mucous membrane that lines the bronchial tubes, an excessive exudation from which would be an evidence of irritation or weakness. There is nothing extraordinary in leucorrhœa, for it is only the excess of a discharge that should always be present for the lubrication of the walls, that would otherwise adhere to each other.

The quality of the discharge may vary just as does the quality of a bronchial discharge, both being dependent upon constitutional and local condition.

And in consideration of the monthly excitement and congestion of the ovaries and uterus, it is not surprising that a debilitated condition of the general system, or other causes affecting the organs of generation, should often determine an irritation of the uterine and vaginal follicles, exciting them to exude an inordinate flow of mucus.

COURSE OF THE DISEASE.

Precursory Symptoms of Leucorrhœa. Heavy pains in the lower part of the abdomen and the small of the back; distaste for articles of food; lassitude; itching of the private parts, which may be tumefied and painful. This condition may be attended by dryness of the skin, fever and sleeplessness. Finally, mucous fluid escapes the vagina, varying in color and thickness. As the disease progresses the above symptoms are present in an aggravated form.

Acute Leucorrhœa. This form may be distinguished from the chronic by its more severe but shorter course.

When acute, the itching of the vagina may be so violent as to be almost unbearable; the local irritation spreads to the surrounding parts and to the bladder, inducing a constant desire to urinate. Soon the characteristic discharge makes its appearance, accompanied by a sensation of heat and distension of the affected parts.

For two or three days this condition becomes more and more aggravated; the discharge increases, and from white it turns to either yellow or green; the inclination to urinate becomes more frequent, and the urine scalds; the local inflammation grows more intense, the pain more severe and prolonged. In the course of eight or ten days the inflammatory

symptoms yield, however; but the discharge is still on the increase, and becomes thicker and of a deeper color. In two or three days more, even these last symptoms abate, and the patient becomes conscious of great improvement. Finally, if no error is committed, in twenty or thirty days the patient gets entirely well. The course of this accidental leucorrhœa is therefore acute, severe and short.

Chronic Leucorrhœa may be the continuance of an acute form in consequence of bad treatment; and its course then is very irregular, and its duration uncertain. In the chronic form the discharge is continuous, although in some instances it intermits; the acute inflammatory symptoms, such as the intolerable itching and the tumefaction of the parts, may not be present, or only in a slight degree; the pains are less, more bearable, and intermittent; the vagina less painful to the touch.

EFFECT OF LONG CONTINUANCE.

But this form, although not severe, slowly undermines the general health from its continuance; the stomach takes up the sympathy, loses desire for food, or bears it unkindly, rejecting it at the slightest provocation; digestion, thus impaired, adds to the general bad condition, manifested by weariness, paleness or puffiness of the face, and indifference to pleasure; the head partakes of the general anæmia, and dizziness, fainting and hysteria supervene; the pulse becomes small and slow, and the perspiration scanty.

The patient then is very susceptible to cold and to all mental impressions.

There is also a transient form of leucorrhœa which may occur either before or after menstruation; oftentimes induced by disordered stomach, but borne without much trouble or suffering, passing away with the adoption of a proper diet and the restoration of a good digestion.

Leucorrhœa seems to replace in some instances the menstrual flux. It has happened that instead of the menses a certain quantity of white mucus has been excreted periodically and regularly every month, lasting four or five days and then disappearing.

Intermittent Leucorrhœa, arising from mechanical causes, yields easily to proper and preventive treatment; when, however, it is a result of feeble, lymphatic and scrofulous constitutions, or of long duration, it may baffle the best efforts of medical art.

The mode of life influences the tenacity of leucorrhœa. When long-

continued it interferes with the regularity of menstruation, reducing its quantity and changing its quality; it may even prevent the establishment of the menstrual functions at puberty. When it has existed for a long time and is suddenly arrested, the malady may be transferred to other organs, as the lungs, exposing them to pneumonia or to a development of consumption if the patient is scrofulous.

In cases where there is a relaxation of the tissue of the vagina or of the muscles supporting the womb, this constant humidity tends to relax still more those tissues, thus forming displacements and falling of the womb.

A disease of this character, depending upon so many different causes, and particularly upon hereditary and constitutional disturbances, apparently simple, amenable yet complicated, and fraught with danger, requires so much discrimination and clearness of judgment that it seems as if no one but the most competent physician should be allowed to examine and advise.

TOO LITTLE ATTENTION GIVEN.

Regarded, as it often is, as a light indisposition, too little attention is given to it, and the recommendation of incompetent persons too readily adopted; it is probably due to this fact that leucorrhœa has been allowed to go on from year to year, until it has sapped the very foundation of a woman's health, and reduced her to a state of chronic valetudinarianism, or sacrificed her to the fatal effects of such diseases as ulceration or cancer.

Hygienic treatment. The treatment of this disease should consist in the strict observance of the rules of hygiene; for a regimen, adapted to the case, is truly of more importance than all the preparations of the pharmacopeia. The leucorrhœal tendency being more generally due to constitutional weakness than to any other cause, it follows that anything calculated to improve the general health should be pre-eminent in the treatment; therefore, the patient should be removed from all enervating influences, of school duties, or any other occupation, of heat, cold or dampness, and sent to the country, where the atmosphere is pure and bracing. Her nourishment, with due regard to her capacity, should be generous, of digestible meats not overdone.

She should take regular and systematic exercise in the open air, but proportionate to her strength, never beyond it; the exercise should be

gradually increased, until she can walk three or four miles a day without prostration. She should not lift, nor carry weights, nor practice cooking by hot stoves. She should keep her skin in moderate perspiration by warm clothing, careful, however, not to expose herself to draughts of cold air. She should shun the ball-room, late suppers, and all scenes of excitement.

She should not remain in wet shoes or garments; and when she has unavoidedly exposed herself to getting wet, she should return home, walking rather than driving, immediately remove the wet articles, dry the skin by brisk friction, dress herself in dry garments, and move about until reaction is complete. Locally, she should keep the parts free from accumulations by daily ablutions and cleansing with castile soap and water.

DISEASES OF WOMEN

(CONCLUDED.)

CHAPTER XX.

IT has been shown that the womb, at puberty, weighs only eight or ten drachms, and in women who have borne several children, only two ounces and a half, and that it can be suspended upon a single hair. It is very evident then, that if the womb is so small an organ, or weighs so little, it will not "fall down," out of its position, by its own weight, as has so long been supposed, by ignorant, credulous and superstitious persons, particularly since we have seen how perfectly it is supported and held up in its place by numerous strong bands or ligaments.

The causes of prolapsus or displacement of the womb may be divided into those which *predispose*, or render persons more liable to be afflicted with this disease, and those which *excite*, or directly produce it. Among the most prominent predisposing causes, we may mention weakness and relaxation of the vaginal canal, and the broad and round ligaments, which support and keep the womb in its place.

The smallest end, or neck, of the womb comes down into the vaginal canal, much in the same way a cork comes down into the mouth and neck of a bottle. If we could dilate the cavity of the mouth and neck of a bottle sufficiently, then of course the cork would fall down through the mouth and neck into the cavity of the bottle below. Besides the round and broad ligaments, the womb is also supported by the vaginal canal, much in the same way that the mouth and neck of a bottle support the cork, which closes it. When the round and broad ligaments and the vaginal canal become weakened and relaxed, any woman is predisposed,

or rendered far more liable to suffer with prolapsus, or displacement of the womb.

All women with pale skin, cold extremities, and soft, flabby, relaxed and feeble muscles, are strongly predisposed to this disease. Still, it is possible for all such women, by great care and prudence, to avoid its production all through life. It will be seen that the organs of digestion situated in the cavity of the abdomen, rest upon and are in part supported by the bladder and womb, which form a sort of elastic floor beneath them. Now it will be easily understood that if the stomach, liver and intestinal canal are forced downwards against the bladder and womb, situated beneath them, by any misapplication of the dress, more especially in that class of comparatively weak and feeble women who are unable to endure it, then the weight and pressure of the intestinal canal from above will force the womb out of its place. When the vaginal wall is much weakened and relaxed, as it often is, in many women who have borne numerous children, very rapidly, then it will force the womb directly downwards, producing what is called *Procidentia*.

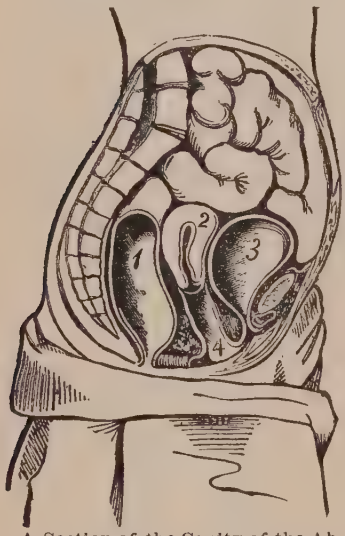
HOW TO TREAT DISPLACEMENTS.

The extent of this displacement will depend upon the degree of relaxation of the ligaments of the womb and vaginal canal, and the amount of weight and pressure upon the womb. Sometimes the womb is only slightly displaced, falling only a short distance down into the relaxed vaginal canal, with its mouth and neck resting against the lower bowel, or rectum. In other instances it falls down through the vaginal canal, and often appears externally.

When the womb is only moderately displaced, with its mouth and neck pressing against the rectum and lower portion of the spine, the pressure and friction of the mouth and neck of this delicate and sensitive organ will soon cause irritation of the mouth and neck of the womb, followed by neuralgic pains through the lower portion of the spine, hips and pelvis, with discharges of mucus, etc.

Symptoms of Procidentia. When the womb falls down into the vaginal canal, it will cause a pulling or dragging down sensation inside of the hips, which is much increased on standing and walking. These disagreeable feelings are produced by the tension of the round and broad ligaments attached to each side of the womb. The extent of these disagreeable sensations will be in proportion to the extent of the prolapsus.

When the womb is only slightly displaced, there will be but little tension, or pulling down upon these ligaments, but in bad cases, when the womb falls entirely down through the vaginal canal, the pain and bearing down sensations are so urgent as to compel many women, who suffer with this disease, to lay down to remove the weight and pressure of the digestive organs from the bladder and womb. Many women, having discovered that the recumbent position affords them almost entire relief, from their most painful and disagreeable feelings, frequently resort to the lounge for relief, and finally become "bed-ridden," as they find it the only comfortable position.



A Section of the Cavity of the Abdomen and Pelvis of a well-formed Woman, exhibiting all of the Organs in their proper places. 1, a Section of the Rectum, or Lower Bowel; 2, a Section of the Womb; 3, a Section of the Bladder; 4, a Section of the Vagina.

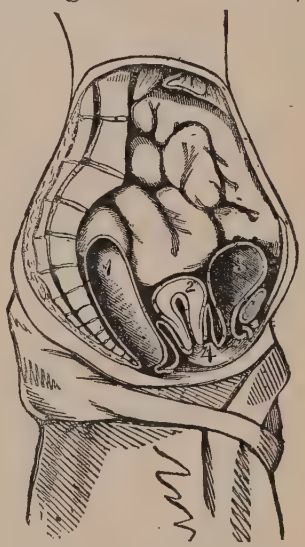
Treatment of Procidentia. For the cure of this variety of prolapsus, we must first remove all weight and pressure caused by the organs of digestion upon the upper extremities of the womb and bladder. Second, we must contract and strengthen the relaxed and weakened ligaments of the womb and vagina. It is totally useless to undertake to cure this disease without removing the causes which produce it. There is no compromise between health and fashion!

Any earnest and honest woman who wants to get well—one who has suffered long enough and is heartily sick of fashionable quackery, and who is prepared to obey the laws of health as revealed to her in the study of her own nature—will have but little difficulty in curing herself, if she will only go to work in the right way. In the first place, she must shorten the waist of her dress, so that the belt which fastens the skirt to the waist of all her dresses shall be applied around her body, not more than three inches below her breasts.

In the second place, she must make for herself an undervest, made full and cut low in the neck, and buttoning up in front, like a vest as worn by men, with a number of pearl buttons fastened to the binding for the attachment of the skirts. The binding of each skirt must have corresponding button-holes to fit.

When the dress is adjusted to the female form in this way, all the weight of the underclothing will be removed from the liver, stomach and the intestinal canal, and suspended upon the shoulders, which were

designed by the Creator for that purpose. When the clothing is applied in this way, it may be worn perfectly loose, so that there is the utmost freedom of the movement of the trunk and extremities of the body; and it is not only loose and perfectly easy when first put on, but it remains loose all day, and does not drag down by its own weight, so that long before night the binding of the skirts becomes as tight as the strings of a harp! When we remonstrate with women who wear long-waisted dresses, and fasten their skirts around their waists, and allow them to drag down the liver, stomach and bowels, against the womb, with their whole weight, and producing displacement of the womb, dragging down sensations, sideache, backache, etc., we are often told that they "never dress tightly," etc. Now this may all be perfectly true, that the clothing, when first applied was loose, but, when it is pinned on, or fastened around the waist with tape strings, it will not stay loose, it will soon drag down, and become tight as its own weight can make it, causing constipation, dyspepsia, flatulency, nervous debility, prolapsus, congestion, inflammation, ulceration of the womb, etc.



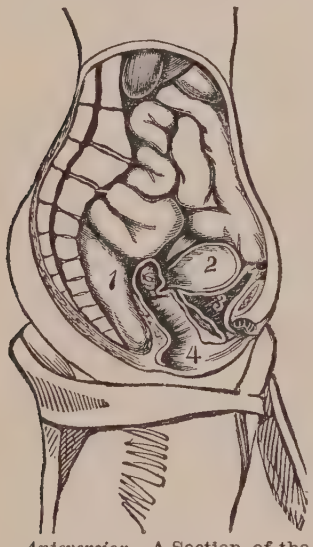
Procidentia. A Section of the Abdomen and Pelvis of a Woman, showing the Bowels, Womb and Bladder displaced. 1, a Section of the Rectum; 2, a Section of the Womb; 3, a Section of the Bladder; 4, a Section of the Vagina.

If we tie a thread moderately tight around one of our fingers, it will arrest the return of the blood to the heart, and the finger will soon swell, and become congested, and then inflamed; and so of the womb, when the dress fits only moderately tight around the waist, compressing the great blood-vessels in the cavity of the abdomen, which are exceedingly elastic, and so prevent the return of the blood from the womb, causing uterine congestion and its terrible consequences. In fact, there is no language that is adequate to describe the amount of wretchedness and misery produced among women from this cause.

As soon as the dress has been properly adjusted, and all weight and pressure has been removed from the womb, it may easily be raised up to its proper place, and the relaxed and weakened ligaments, and vagina, may be contracted and strengthened by suitable treatment. To induce muscular contractility, no remedies have yet been found superior to preparations of iron-alum, and nux vomica.

ANTEVERSION OF THE WOMB.—In many instances, more especially among young women, when the vaginal canal is not relaxed, and its cavity distended by giving birth to numerous children, or by weakening and exhausting discharges from the vaginal canal, leucorrhœa, etc., the womb, instead of descending into or through the vagina, may be turned over in front against the bladder, producing anteversion, as seen in the accompanying illustration.

When the womb is displaced in this way, the symptoms, or disagreeable sensations which it will produce, are totally different from those caused by procidentia, as detailed in another place. In consequence of the pressure of the womb against the bladder in front of this organ, it is greatly reduced in size, and its neck is often prolapsed, forming a soft elastic tumor in the mouth of the vagina, that may often be mistaken for the womb, or for a polypus, or other tumors, resting in the vaginal canal. The bladder, being much reduced in size, can retain only a small quantity of urine at a time, creating a desire to frequently urinate, with constant uneasy feelings, or bearing down sensations in the lower portion of the abdomen, and through the region of the bladder.



Anteversion. A Section of the Abdomen and Pelvis, exhibiting 1, a Section of the Rectum; 2, the Womb turned over against the Bladder; 3, and forcing it down into the Vagina.

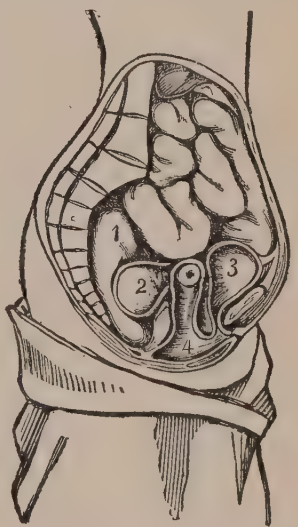
These feelings will be greatly increased by lifting, standing, and walking about, etc. Anteversion is by far the most frequent of all forms of displacement of the womb. When any woman stands erect, and the organs of the pelvis are all in their proper places, the womb is inclined a little forward against the bladder, and any force acting upon it from above will be more likely to turn it still further forward against the bladder, than in any other direction.

Treatment of anteversion of the womb. This form of displacement is always produced by pressure from above, acting upon the womb beneath, and forcing it over in front, against the bladder. Now it is very evident that it will be utterly impossible for any pessarie, or other instrument introduced into the vagina, to raise the womb up off the bladder, and retain it in its proper position. This can only be accomplished by first removing all pressure from above, by shortening the waist of the

dress, so that the belt does not come down more than three inches below the breasts, removing all whalebone, abandoning the corset, and adjusting the skirts to a well fitting undervest.

When all weight and pressure from above have been removed from the womb, as directed, then the weakened and relaxed ligaments of this organ may be induced to contract, by the judicious use of cold hip baths and astringent injections, friction over the lower portion of the abdomen, inside of the hips, with a coarse towel, night and morning, in a reclining position, and the use of astringent tonics internally, such as iron, quinine, nux vomica, etc.

RETROVERSION OF THE WOMB.—When great pressure and weight are applied to the fundus of the womb from above, it will sometimes turn over backwards against the rectum, or lower bowel, instead of forwards against the bladder, producing what is called retroversion of the womb, as seen in the following illustration. When the womb turns over backwards in this way, it will cause another train of symptoms or disagreeable sensations totally different from those already described as peculiar to other forms of displacement.



Retroversion. A Section of Abdomen and Pelvis, exhibiting 1, the Rectum; 2, the Womb, turned over back against the Rectum; 3, the Bladder; 4, Vagina.

In consequence of the weight and pressure of the womb against the rectum, it causes a bearing down sensation, as if there was something in the bowels which must be discharged, to afford relief. This bearing down feeling with a desire to have a movement of the bowels is often accompanied with heat and slight burning sensations through the lower portions of the abdomen and hips, caused by irritation of the womb, vagina and rectum.

Retroversion is by far the most uncommon of all the varieties of displacement of the womb, and it can only be produced by the wicked and reckless abuse of the female organization by the misapplication of dress. A very large amount of force must be applied from above to the fundus of the womb to produce anteversion or retroversion. These diseases are not produced, as many ignorant persons unhappily suppose, by "lifting" some trifling object, "carrying a bucket of water," or walking "upstairs," as the author has often been assured by its unhappy victims, but by causes already fully explained and thoroughly illustrated, so that the

most incredulous can fully understand them, and know what they must do to prevent and cure these diseases!

Treatment of retroversion of the womb. For the cure of retroversion of the womb, it will be necessary to remove the causes which produced it. The author has no sympathy with that class of medical charlatans, who either do not understand the nature and causes of these displacements of the womb, or who are too timid and time serving to point them out clearly, so that they can be clearly understood by the numerous victims of these diseases, who are compelled to suffer, often ignorantly, the consequences of their own indiscretions.

FIRST THING TO BE DONE.

The first thing to be accomplished in the treatment of all of these diseases, is to totally revolutionize the fashionable habits of dress, and having readjusted the clothing upon sound hygienic and physiological principles, then various local means may be resorted to for the purpose of raising up the womb to its proper position in the cavity of the pelvis, such as cold hip baths, astringent injections, and friction of the abdomen while in the recumbent position, with the hips well elevated, and with the face downwards. This position is often indispensable to release the fundus of the womb from beneath the promontory of the sacrum, or lower portion of the spine, which projects so far forward into the cavity of the pelvis as to often interfere with the return of the womb to its proper position.

Treatment.—The hymen must be divided or an aperture made. This operation is not attended with pain. The vagina should then be syringed with tepid water and the recumbent position observed until the right position of the organ be regained.

VAGINETIS, OR INFLAMMATION OF THE VAGINA.—Inflammation of this organ may be confined to the lining membrane, or it may extend to the subcutaneous tissue.

Symptoms.—Sensation of weight and fullness in the vaginal canal; pain and redness of the part. The speculum will reveal redness and swelling of the lining membrane, which is tender to the touch. At first there is no discharge. After a few days there is a thin serous secretion, which finally becomes yellowish, or greenish, or purulent. It is difficult to detect this discharge from that of gonorrhœa. It is very important, however, to do so, in order to protect the character for chastity of the individual afflicted. The discharge of gonorrhœa can only be detected

from that of vaginitis by the aid of the microscope. No physician should dare pronounce the discharge gonorrhœal without such microscopic examination.

It may result from cold, excessive sexual indulgence, child-bearing, stimulating food and drink, gonorrhœal virus, etc.

Treatment.—Warm hip-bath and injection of cold water into the vagina. If the discharge is excessive, procure a solution of five grains of sulphate of zinc to an ounce of water; two ounces to be injected three times a day. The bowels are to be kept regular.

Inflammation of Ovaries and Tubes.—Diseases of the Fallopian tubes are more common than inflammation of the ovaries. Where the tubes are much inflamed, thickening may occur, while there may also be a discharge similar to what is observed in inflammation of the uterus.

PAIN AND SORENESS.

Symptoms.—Dull aching pain in one or both illiac regions, accompanied by sensations of weight and heat; pain and soreness on pressure in the region of the ovaries, with some fever, which is almost always intermittent.

Causes.—Cold, blows in the region, over-sexual indulgence, suppression of menses, etc.

Treatment.—Counter-irritation in the region of the ovary.

Inflammation of the Mucous Membrane of the Vagina, or Canal Leading to the Womb.—The "mucous membrane" that lines the vaginal canal may, from some cause or other, become the subject of inflammation, whence its name, vaginitis. It is, in many instances, a very distressing affection. It assumes various forms—it may be general or it may be limited. The acute form of the disease is not a very common affection. The chronic form, on the contrary, is of greater frequency. In this form it is mostly considered as of a secondary character, a symptom of some other affection.

The only form of this affection which I shall consider is the simple vaginitis in its acute and chronic character. It is typical of the various forms of inflammation with which the mucous membrane of the vaginal canal may be attacked. This inflammation of the mucous membrane of the vaginal canal, whether acute or chronic, is an affection that is met with at all periods of woman's life, and at all ages.

As just observed, the disease under consideration consists in an

inflammatory condition of the membranous lining of the canal leading to the womb, from some cause or other presently to be mentioned. The disease, as just stated, is met with in both acute and chronic forms. Each type may appear originally to be the result one of the other. The acute form may be excited by some special cause and rapidly pass into the chronic. The affection may also have originated in an incipient and low grade of inflammation, or it may at any time take on an acute and occasionally a very virulent character. The tendency of the inflammation is to extend and invade the surrounding organs, tissues, etc., such as the womb, its neck, or the bladder, and to constitute so many complications superadded to the original character of the affection.

CAUSES OF INFLAMMATION.

Among other causes recognized as capable of exciting inflammatory action in the mucous membrane of the vaginal canal, are the following:

1. Various vaginal secretions. 2. Exposure to cold, dampness, etc. 3. Various abnormal states of the womb, its neck, and of its surrounding organs, tissues, etc., such as inflammation, ulceration, etc. 4. Peculiar habit of the constitution, such as the scrofulous, the lymphatic, etc. 5. Various injuries of a mechanical organ, such as may be produced by pessaries, excessive intercourse, or contusions, lacerations, etc. 6. Chemical agencies, such as applications to the womb, or its neck, made in a careless manner. 7. Specific poison. It is unnecessary to enter into a full consideration of these various causes; they sufficiently explain themselves.

Inflammation of the mucous membrane that lines the vagina or canal leading to the womb, if acute, may be recognized by the following symptoms:

A sense or sensation of heat; it may be burning—and fullness, swelling, tension, redness of some of the organs and more or less itching, great tenderness, amounting sometimes to actual pain, rendering the necessary instrumental manipulation painful and frequently unsatisfactory. An arrest of secretion, which produces dryness, then a profuse purulent vaginal discharge of a yellowish or greenish color takes place, of an acrid and offensive character, lasting more or less long.

More or less frequent desire for micturition exists. Erotions or excoriations occur within and around the external organs. All these symptoms are liable to be periodically aggravated by the menstrual

congestion; thence arises a tendency to its perpetuation, if it does not at once subside or give way to the proper means of treatment.

It is thus easily seen, that if the slightest amount of inflammation is left previous to menstruation, the congestion which precedes this function may fan it into a flame, developing anew the inflammatory action. In the chronic form of this affection, the symptoms are much less decided, but a long train of sympathetic appearances, not unlike those observed in inflammation and ulceration of the neck of the womb, to which I would refer my readers, usually accompanies it.

The chronic form, whether general or partial, may last indefinitely, like chronic inflammations of all other mucous membranes, giving rise to a constant vaginal secretion, varying in intensity according to the patient's state of health, social and hygienic position, and the particular period of the month. In the course of time, this secretion passes into a mere flux, and its existence in this aspect is a source of great annoyance, discomfort, weakness and general debility.

VARIOUS MORBID CONDITIONS.

The symptoms enumerated in the preceding article may be the result of various morbid conditions, inflammatory or other, of the womb, its appendages, of the mucous membrane of the vagina, or the surrounding tissues, and hence, there is occasionally great difficulty, almost impossibility, in recognizing the real character of the affection under observation. It is, consequently, necessary to obtain a truthful and accurate history of the case, and all the antecedents of the patient, and above all, to make a thorough local examination. Nothing short of this will enable the practitioner to discriminate between the disease under consideration and any other disease of a similar character; or in other words, between an inflammation of a specific or non-specific origin.

The prognosis, or outlook, of this affection is not unfavorable. It is the nature of this disease, generally, to run a certain course, more or less long. Its chronic form, I observed when considering the symptoms of the affection, may continue indefinitely, and become the source of great annoyance and discomfort; and the general debility it occasions may render women whom it attacks invalids for the remainder of their life, or for that period of years in which the affection remains unchecked or uncured.

The character of this affection having been sufficiently explained

in the preceding articles, my readers will see the necessity of trusting its management, without loss of time, to the physician, who alone is competent to bring it to an early and safe termination. In the meantime, patients attacked with this disease, should at once make such preparations as will enable them to enjoy perfect rest, and a horizontal posture; they should avoid locomotion and excitement, and abstain from intercourse. Their diet should be light, of moderate quantity and unstimulating.

Fomentations, by means of flannels wrung out of hot water or some soothing decoction, may be advantageously applied over the lower part of the stomach and around the hips. They should also, several times a day, take a hip or sitz bath, or better still, sit over a tub partly filled with warm water, in which, for soothing purposes, a sufficient quantity of boiling starch, poppies or linseed have been thrown. In this position they should make use of copious injections of warm water.

This outline of treatment applies more to the acute than to the chronic form of the disease. In the latter form the patient should take frequent out-door exercise; her diet may be more liberal, yet unstimulating; cold bathing; sea-bathing if possible, and daily injections, as recommended above, are appropriate measures to be employed.

"In the treatment of all cases of vaginitis," remarks Dr. Graily Hewitt, "whatever be the cause, very great importance is to be attached to the observance of cleanliness; frequent ablutions should be employed." Finally, perseverance and time are important items in the treatment of the disease in its chronic form. "If," observes Dr. Byford, "we can remove this chronic inflammation in three or even six months, we ought to be satisfied. And we ought not to be surprised to have it return one or more times after it is apparently cured. It is well, also, to teach our patient patience in this respect."

HEALTHY AND ROBUST CHILDREN.

CHAPTER XXI.

PHILOSOPHERS and physiologists have discussed at length the relation of the mind to the body. We shall not follow them in their subtle reasonings. We have evidence enough for our purpose, to admit, that the body and the mind grow apace, and decay almost in the same ratio; that affections of the body re-act upon the mind, and affections of the mind re-act upon the body. There are exceptions to this rule; but as we speak of general training, the exceptions must be overlooked, and the general law of health carefully studied.

The brain, the seat of our intellectual faculties, is as material as a leg or an arm, and is subject to the same laws for its preservation and destruction. When the matter composing the brain becomes affected by morbific causes, the equilibrium of the mind becomes disturbed, and reason put at variance with the mental conceptions of right or wrong of people in a state of healthy organization. Hence, the old proverb, *Mens sana in corpore sano*, "A sound mind in a sound body."

The brain, having a physical organization, must depend on physical laws. The mind, however, which is the spiritual manifestation of the functions of the brain, depends upon physical laws only so far as it relates to matter, the brain. But the mind has properties of her own, which must depend upon moral forces for nutrition. Intuition and reason are the fundamental properties of our intellect.

The first is innate and has an original power of its own; the second becomes efficient by being susceptible of a fine and high development by means of imitation and comparison. These properties of the mind vary in different individuals. The innate property, when possessed in a very high degree, will produce a genius, even in the midst of the most passive ignorance.

Reason is moulded by the moral food it receives from its surroundings, and is therefore more susceptible of cultivation. For the former,

we can only thank our great and wise Creator; for the latter, the old are responsible to the young, in the manner of leading them to a system of distinguishing right from wrong. It is to this point that I call the attention of parents. This moral training devolves upon them: they are responsible for it.

Talis pater, talis filius, "As is the father, so is the son," is another old maxim, based on observations which have been made from time immemorial. This may be taken as a truism, proving the inheritance of moral tendencies as of physical perfections or imperfections, and is an argument adopted by such parents as like to shift their responsibility. But while inherited physical lines cannot be changed by a separation of father and son, moral traits can; and this fact is often exhibited in those, who, having left their parental roof before their mind was fully developed, have returned so changed as to seem strangers in the midst of their own family.

MENTAL DEVELOPMENT.

It is indisputable, therefore, that the mind, although a spiritual essence, is subject to growth, development, and training; in other words, to education.

We do not intend, by this, to deny that there are manifestations of the mind whose origin can be traced to the parent. We know too well, that the transmission of organic, moral and mental traits is possible; we too often recognize congenital tendencies to disease of body, and deterioration of mind. But this is the inevitable, concerning which we have nothing to say now. We are treating of those qualities that take their course from education.

A husbandman may plant a tree perfect in symmetry and in health. When once that tree is planted, it becomes subject to the vicissitudes of climates, to the shock of storms and tempests. If it is allowed to grow without protection, its beautiful symmetry will soon be lost, its straight stock become crooked, its smooth face knotty and rugged. So it is with children. A child born of healthy parents will be healthy in its physical and mental tendencies.

But, as soon as born, it becomes exposed to impressions, which will affect its proper growth and development. It matters not how young the child is. As its body is liable to affections engendered by contact, infections, errors of diet, or atmospheric changes; so its mind is affected by conceptions induced by external impressions. Thus the child grows in

this atmosphere of moral impressions. Its purity and integrity can only be maintained by surrounding it with purity and integrity. A careful parent, watchful of the manifestations of his child's mind, can timely repair many a shock that it has received from dangerous impressions, and correct many wrong natural tendencies.

Reason, which is distinguished from other faculties of the mind by its relating always to knowledge, is the power that conceives ideas of right and wrong, true and false, by comparison. Reason, therefore, is the generative power of thought, the judge of fitness of ideas, and, consequently, the motive power and regulator of our action.

When the process of reasoning is complete, it manifests itself in action. Action has immediate effect upon ourselves and our neighbor. The action will then affect our moral and physical welfare, and our neighbor in his rights and privileges.

FOUR STAGES OF LIFE.

Having thus, in a few words, examined the relation of the mind to the body, and suggested the progressive extension of its effects upon the rights of our fellow-men, let us consider the relation of its growth with that of other organs of the body, and its gradual development.

The term of life, although uninterrupted in its moral and physical growth and decay, has been divided into four stages: *Infancy*, *Adolescence*, *Virility*, *Dementia*.

This division is not a mere speculation of metaphysicians: it exists in Nature, although the lines of demarcation are not so bold or sudden as to be immediately appreciable to the eye or to the mind.

Infancy, or childhood, is a period almost totally vegetative: it is a period of the development of the organs before the mind is sufficiently developed to completely exercise its influence over them,—before they are fit for action. This period will embrace the twelve or fourteen first years of our life.

Adolescence is the progression of the former period. The term comes from the Latin *adolescere*, "to grow," to "become strong." It denotes that period of human life between the first signs of puberty, and the time when the body ceases to grow, and has acquired all its physical perfection. This period commences at eleven or twelve years of age with women, and at fourteen or fifteen with men; ending with the former at twenty-one, with the latter at twenty-five, years of age, or thereabout.

The changes that the organism undergoes at this epoch of life are very remarkable in both sexes. In the man, the organs of generation, until then passive and stationary, begin to develop, and prepare themselves to fulfil those functions, so important to the human species, of reproduction. The capacity of the chest becomes greater; the voice becomes stronger and more sonorous; the beard commences to grow; the muscles acquire shape and strength; the bones become firmer; and the figure gains a decided height. All the organs become perfect.

From this exuberance of life, which is not always exempt from casualties,—from this increase of energy in all the organs,—come those impetuous movements, those fiery passions, those generous impulses, which characterize the young man. Soon he dreams but of love, of devotion, of combats, of active exertion and successful efficiency; he desires glory; and, in his exuberance of life, he becomes the ardent lover, the intrepid warrior, the eager student, the generous friend.

PERFECTION OF WOMAN'S ORGANS.

In the woman, these physical and moral changes are not less remarkable. The organ of her especial function, the womb, which so far has given no special sign of existence, comes out of its state of inertia; the menses appear, to return periodically every month; the breasts, whose functional existence is so intimately connected with the womb, commence to develop; every organ perfects itself in preparation for the process of conception.

The body of the woman, however, retains a part of that infantile delicacy of texture, of that suppleness, of that grace of movement, which makes such a contrast with the striking vigor, the activity, the impetuosity, that distinguish the same stage in man.

It is at this epoch, so fitly called the "flower of youth," that the two sexes feel that irresistible attraction to one another, that desire to approach each other, which, without doubt, is the source of the sweetest enjoyment, but which also often leads into acts that Nature reproves, in those excesses so fatal to the health of our youth.

Virility ("manhood") is the period that commences from adolescence, and ends with old age. In the age of manhood, the body has acquired all its proportions and all its strength. The life becomes more equal and uniform; the ideas, which have followed in the ratio of physical development, now become more profound and fixed; the movements

of the body are consonant with the dignity of the mind. The time of brilliant illusions has passed: imagination gives place to judgment, frivolity to circumspection, heat of passion to cold reasoning, vivacity to reflection, impulsive generosity to prudence and calculation and finally to ambition.

Dementia is the period when the body and mind decay. It is less distinct, as it varies in different people, according to the preservation of their health; and oftentimes we see an active mind in a decayed body. Yet it is a period that must come sooner or later to both mind and body.

Of these stages we will give our attention to the first two, as the latter two are beyond training or parental prerogative.

The word "hygiene" is used here to express the system that should be followed in directing the children's mind, and to give them a healthy and robust constitution, without which, when they arrive at the age of manhood, they could not fulfil the duties which Nature has assigned to them among their fellow-men, in the society of whom they must revolve.

DANGEROUS MISTAKE IN EDUCATION.

The most dangerous conception in the training of children is one that unfortunately prevails even among the educated classes; and that is, that the moral education can be absolutely isolated from the physical. These two conditions, the moral and the physical, are dependent upon, and in close relation to each other. Man cannot possess a faculty that does not find its outward expression through an organ. How can it be expected, then, to attain the perfection of the former, without assisting in the development of the organ without which it could not practically exist? The education of a child consists, therefore, in faithfully following the laws of Nature.

Education should be slow and progressive: it ought to be applied as each organ becomes developed. The idea of forcing children beyond their mental or physical capacity demonstrates the grossest ignorance of the laws of Nature; and the result of such process will be the reverse of what is intended to attain,—dwarfish body, a puny mind.

A system of education which would develop a healthy state of mind and body should allow the organs time to form themselves before exercising them, and would from the first direct or regulate their action. It is necessary, therefore, to follow the order in which they become successively developed; which development may vary in different subjects.

Consequently, the first object of the mother should be to nourish her child well; then to regulate its impressions from external bodies or things, and to favor the development of the faculty of each organ; lastly, she should give her special care to the mind, the faculties of which manifest themselves according to the development of the organs.

A child thus raised may not be an angelic seraph, which foolish women dream of. It will be a lively, turbulent, and probably somewhat opinionated child; but the excellence of its constitution, the equilibrium of the faculties so perfected, will denote a degree of vigor and health bespeaking a happy future for it. The development of its mind will be marked by the facility with which it will learn; its moral strength by its assurance and self-dependence, and by a certain dignified freedom of thought and action.

PREVALENT VICES TO BE AVOIDED.

It is not enough, therefore, that a mother should nurse her infant: she should attend to its development herself, instead of trusting it to mercenaries, whose minds are so narrow that they seem often to outrage common sense and reason. The parents should watch the child with solicitude, particularly at that period when many dangerous vices are practised; and, when the child is older, they should surround it with that wholesome example of probity and virtue which is the best lesson that can be given.

The parents should never forget that the child sees, hears, and learns, and that before it, at least, there should never be made exhibitions of ill-temper, anger or violence. They should refrain from vulgarity, and from habits that could not be tolerated in good society. The fact that the father is master of his own house is no reason why he should contaminate his children with the worst passions of his nature or of his education. If he has not respect for himself, he should, at least, desire that his children might be respected by their fellow-men. It is during this tender age that impressions are received which a life-time are not sufficient to destroy.

From the conduct of the children, one can generally make an estimate of the moral qualities of the parents. If a child swears, I know either that its father is given to profanity, or he does not love it sufficiently to shield it from associations where profanity, immorality, and ill manners abound.

People talk of children's perversity. As for myself, I do not believe in natural depravity. God is too merciful and too wise to create man depraved, that man may make himself upright and perfect. This would make man greater than God. The only instincts I can trace in human nature are common to all animals, those of self-preservation and self-gratification. The child of the desert knows no other law. He would pick from the earth, bring down from the air, anything that this instinct would suggest as useful to himself.

When men came together in multitudes and formed society, it became necessary to make such mutual agreements as would define their duties toward one another, for the preservation of order, in combined action. Society, as it grew in magnitude, improved these agreements, and progressively enacted still more stringent and binding measures, that would secure the rights of one and the rights of all, until they reached that high degree of civilization that now governs the best part of the world. The negative, "Do not unto others what you would not have done unto yourself," has become the highest law of civilization, while its positive complement has become the ideal commandment of Christianity.

TEMPTATION AND THEFT.

The taking of other people's property is called a theft; yet if an uncivilized being, one who grew in the solitude of the forest or the prairie, should suddenly be transported into our streets, and, at a moment when his appetite demanded food, should find himself before a baker's shop, with tempting loaves in his show-window, would you condemn him for theft if he rudely broke the glass, appropriated one of the loaves, and sat himself down to devour it with gusto?

Yet our children have to live in the society of their fellow-men; and, in order to become worthy members of it, they should be made acquainted with the laws that have modified that crude intuition of self-preservation and self-gratification. But how? By education. The moral training of the parents is the loving and artistic hand that is to teach the discrimination of fine shades of right and wrong, the appreciation of that chiaroscuro which will tone down the bold lines of their conceptions, that will make each feature, although distinct in itself, blend in perfect harmony with the others, so as to make the whole a thing to admire, a thing to love.

Let no parent delude himself, or attempt to screen his deficiency, by

putting forth the false argument of the child's perversity, or natural depravity.

"Here, in the family, at home, if anywhere, we are to look for that moral training which is to fit our youth for the active pursuits of life, and prepare them to meet its seductions and its duties. Here, if anywhere, they are to acquire the power of governing passion and resisting the impulses of the lower appetites; of discerning the nicer shades of right and wrong; of sacrificing self to the call of benevolence or duty, and, amid trial and change, steadily keeping in view the great ends and purposes of life."—*Ray's Mental Hygiene.*

A study of the child's nature and temperament is necessary to understand its wants. A judicious, loving, and persuasive system will smooth many of the rude lines of his nature. Do not batter him down with imperiousness and coercion, as if he ought to know as much as yourself, but try to elevate him by instructing and developing his moral sense. Raise him to a higher estimation of himself by believing in his honesty of purpose, by lifting him to a higher sense of dignity.

INSTINCT OF THE ANIMAL NATURE.

An innocent child cannot steal. If he takes what is not his own, it is because his wants have not been understood, and because he has been denied that which would gratify him, or else because he has learned, that, to take secretly, will not incur the displeasure or punishment of his parents.

Self-gratification, we have said, is an instinct of animal nature; therefore the child, who is yet an animal, is a gourmand. While his mouth has tasted what is good, his reason is not sufficiently developed or educated to understand what is not good for him. He has not yet learned that to eat at regular hours is conducive to his well-being: he has tasted the apple, and the apple was sweet; all your temper and anger will not prove to the child that the apple was not good for him.

You say the child is a natural thief? How is it that the child would not steal a diamond, but would steal an apple? The education which will eventually teach him that the value of the diamond is above that of the apple will also teach him that his appetite can be satisfied by making a demand upon his parents at the proper time, and that to eat every hour of the day, however good to his sense of taste, is not conducive to his health. Be watchful, and, if it is impossible to keep the child from associations that will teach him to deceive, act so with him that deception is unnecessary.

Above all, do not accuse him of deceiving, lying, or stealing; for those opprobrious names will suggest to him acts that are possible and within his scope. A great deal of judgment is requisite here. If a child has surreptitiously taken an apple, let him understand that he can take one with your knowledge; if he lies, prove to him that the truth would have done him less harm than the lie; that there was no necessity of secrecy or deception, as his parents would have been glad to gratify him.

In fact, bring him near to you; let him know that he can share with you; that you will share with him. Bring yourself down to his level; and he will find in you his friend, the sympathizer in his pleasures, the generous supplier of his wants. Let him feel that he can come to you with his little trifles, that he can find in you the soother of his sorrows; thus, with that gentleness that a loving heart is capable of, you will be able to lead him from the stray path into the straight road of morality and integrity.

JOINING CHILDREN IN THEIR SPORTS.

"Those who will join with children, and help them in their sports, will learn by this mode to understand the feelings and interests of childhood; while, at the same time, they secure a degree of confidence and affection which cannot be gained so easily in any other way. And it is to be regretted that parents so often relinquish this most powerful mode of influence to domestics and playmates, who often use it in a most pernicious manner. In joining in such sports, older persons should never yield entirely the attitude of superiors, nor allow disrespectful manners or address. And respectful deportment is never more cheerfully accorded than in seasons when young hearts are pleased and made grateful by having their tastes and enjoyments so efficiently promoted."—*Miss Beecher, in "The American Woman's Home."*

A child lies: why does he lie? Because he is afraid to tell the truth. Why is he afraid to tell the truth? Because he has been rebuked or punished for doing what would gratify him.

A child finds a gratification in going in company with other children: the parents fear those associations, and forbid the child to go. This command does not quench his desire for the company of his equals: he will fear to go after your command, but he will wish to go all the same. His intent of self-gratification is still stronger than his sense of duty: therefore he will go surreptitiously, thus practising an act of deception

which will afterwards induce him to lie for fear of rebuke. What is the parent's duty, then? To go with the child, of course, so as to have the opportunity of examining the character of the company his child goes in, and to gratify him by providing pleasurable companionship of the right kind.

Thus, while it would be impossible to convince the child that the company of children is not gratifying to him, he can be taught that the company of certain children is not good for him, while that of others is not only good for him, but would meet with the full approbation of the parents. Thus the child is taught to discriminate, which mental process will lead him to the selection of proper associates.

MOTHER AND SON.

It is often said, "Father and daughter, mother and son." Wherefore this saying? It is because it has generally been observed that the daughter will go to the father, the son to the mother, for indulgence. Why this preference? Is it because there is more affinity between opposite sexes? Not necessarily. But, whatever the inward cause, the immediate reason is, that the father has more sympathy for the daughter, the mother for the son. Whatever may be the reason, a cause exists; and it goes to prove that the parents get the confidence of the child they have sympathy with. Take a look at schools, for another example, and you will discover the intuitive like and dislike children take to the teachers. While a child is perfectly amenable under the tuition of one teacher, he is perfectly intractable under the tuition of another. Some teachers are even detested by the whole school, while others are much beloved. The fault lies with the teacher; he has no sympathy with some or with all children in general. Such men or women are not fit to be teachers, however learned they may be. Is there any one, however old, who, recurring to early days, does not think with pleasure and affection of some teacher, and with aversion of some other? Sympathy on the part of the parent will be an irresistible charm to the child.

Some parents, however, fail on the other side. They are apt, for instance, to take a child's tricks as a demonstration of smartness, and be pleased and amused with them. This practice is dangerous in the extreme; for it will lead into an indulgence, the result of which, later, may be beyond their control. It is most interesting to watch the gradual development of a child's mind; we are charmed by all the actions that

manifest a reasoning power: but do not nurse vitiated thoughts with your approval lest they remain impure forever.

Induce your child to practise generosity, humanity, and good manners. Let him divide his crumb of bread with the beggar or his play-fellows, lest he become a miser. Let him not assume an air of superiority to his inferiors, lest he become imperious; teach him to be gentle with his equals, lest he become arrogant; teach him to be tender to the mute animals, lest he become cruel; teach him deference to the old, lest he become contemptible; teach him to love his neighbor as himself, that he may be just; and, above all, teach him not to fear but to love his God, that he may be happy.

I cannot close this earnest exhortation to parents, better than by quoting the following passage from the pen of Miss Catharine E. Beecher:

"Children can be very early taught that their happiness, both now and hereafter, depends on the formation of habits of submission, self-denial, and benevolence; and all the discipline of the nursery can be conducted by parents, not only with this general aim in their own minds, but also with the same object daily set before the minds of the children.

"Whenever their wishes are crossed, or their will subdued, they can be taught that all this is done, not merely to please the parent, or to secure some good to themselves or to others, but as a part of that merciful training which is designed to form such a character, and such habits, that they can hereafter find their chief happiness in giving up their will to God, and in living to do good to others, instead of merely living to please themselves.

"In forming the moral habits of children, it is wise to take into account the peculiar temptations to which they are to be exposed. The people of this nation are eminently a trafficking people; and the present standard of honesty, as to trade and debts, is very low, and every year seems sinking still lower.

"It is, therefore, pre-eminently important that children should be trained to strict honesty, both in word and deed. It is not merely teaching children to avoid absolute lying, which is needed: all kinds of deceit should be guarded against, and all kinds of little dishonest practices be strenuously opposed. A child should be brought up with the determined principle, never to run in debt, but to be content to live in a humble way, in order to secure that true independence which should be the noblest distinction of an American citizen."

PHYSICAL TRAINING OF CHILDREN.

CHAPTER XXII.

HEALTH is largely dependent upon the skin, which is more active in the child than in the adult: hence it requires greater attention. The sympathetic relation of the skin, and, indeed, of all the mucous membranes, with the brain is very intimate. Under the proper paragraph, the manner in which an infant should be treated immediately after birth, has been described. To secure a perfect action of the skin, the child should never be exposed to extreme heat or cold; and, if one cannot prevent the atmospheric changes, the dress and temperature of a room can be easily adapted for his health and comfort. Pure air is the most invigorating element to the skin and the lungs: hence a child is better in the country than in a city, on high and dry localities than in low and damp places. Its room should be moderately cool, rather than warm.

Frictions and bathing are healthful to the skin at every time of life, but particularly during childhood. The skin, in order to eliminate its proper fluids, must be free from all dirt, which forms a coating sure to prevent the due exhalations, compelling it to retain them to its great injury.

A child should become gradually accustomed to cold bathing; and, when old enough, it should be immersed in running water. The shock is beneficial, and swimming a most salutary exercise. Young girls are deterred from the river, and from swimming, through imaginary fears or prejudices: it is a pity, for that is a practice as healthful to them as to the boys. When a safe place is provided, the only care that should be taken is that they do not become chilled while bathing: after the bath, they should be rubbed dry with a coarse towel.

The length of time that they should be allowed to remain in water will depend upon its temperature and their own power of re-action; for, while one child can remain in the water half an hour and still feel warm,

another can hardly stay ten minutes without feeling chilled. A few minutes after the child has come out of the water, he should feel a pleasant glow of warmth through him; if not, the bath is injurious to him.

BATHS may be used for the purification of the skin simply or for therapeutic (curative) purposes. They may be classified as *cold*, *tepid* and *warm* baths.

The *cold bath* (water at from seventy to eighty degrees Fahrenheit) gives, at most seasons of the year, a sensation of coldness. Its effects are "primary" and "secondary." The first are those which take place at the time of the immersion; the second, those that occur later, constituting what we understand by the term re-action.

EFFECT OF COLD WATER BATHING.

The first effect of cold water applied to the body, generally, is to abstract a certain amount of heat from the surface, to constringe the capillary vessels, and to force the blood inward. Now, as the living body possesses the remarkable property of maintaining its temperature at very nearly the same point, whether it is in a colder or hotter medium than itself, the vitals at once set to work in restoring the caloric abstracted by the contact of the water; and, as the functions of circulation and calorification go necessarily together, the vital powers, acting through the heart and blood-vessels, attempt a return of the blood that has been forced inward by the coldness of the water.

This is what is called "re-action." If the individual is sufficiently strong and well stocked with vitality, the blood is quickly returned to the surface and to the extremities, constituting what is termed *good* or *vigorous* re-action. But if the surface and extremities continue to remain unwarmed by a slow return of blood to them, as happens in the case of feeble persons, there is said to be *poor* or *insufficient* reaction.

The *tepid bath*, sometimes called "*lukewarm*," ranges from eighty to ninety-two degrees Fahrenheit. Its effects do not differ much from those of the cold bath, only not so lasting and permanent. It is especially useful in the treatment of infants and children, and in all cases where the re-active energy is feeble. If in any case we are in doubt whether the cold bath is admissible, the tepid form will be a milder measure, and, at the same time serve as a test in venturing upon the cold. The tepid bath may be continued longer at a time, which in some cases will be found an advantage.

The *warm bath* ranges from ninety-two to ninety-eight degrees Fahrenheit. This is used only for therapeutic purposes.

The time of day. After a night's rest, the body has regained vigor, the circulation is freer, the re-actionary powers are stronger; consequently, morning is the best time for bathing.

Before or after meals. As digestion requires heat in its chemical reaction, and as the nervous system should not be disturbed while engaged in assisting the process of digestion, bathing after meals is injurious.

Re-action is known by the pleasant glow of warmth that is felt through the body after bathing. If the extremities remain cold, the lips and nails remain blue, the reaction is not good, and the bath should be omitted.

PLAIN RULES TO BE OBSERVED.

Bathing in the open air is preferable, provided there does not exist a too great degree of difference between the temperature of the water and the atmosphere.

The head should be sponged before and after the bath.

After violent exercise, the system being weakened in consequence, no bathing should be used until after a sufficient rest has been had to restore the natural forces.

When the body is in a high degree of temperature, care should be taken not to dip it in a very low degree of water. Bathing is useful at all seasons, when the above rules are observed.

As soon as children walk, they should be promenaded twice a day, except during windy or damp days. It makes no difference how cold it is; clothing and exercise will keep them warm, and their cheeks will have that healthy glow which is stimulated by fresh air. During hot weather, they should be taken out during the cooler hours of morning and evening. The length of the promenade should be in proportion to their strength, never beyond it.

During the walk, the children should be amused by showing them objects of interest; the walk ought to be to them a pleasure, not a bugbear. After the fourth or fifth year, children should be allowed to play such games as are consistent with their strength. Girls should not be restrained from joining the boys. Such games as would amuse the mind, as well as exercise the body, are very healthful, since they maintain a proper equilibrium between mind and body.

Let not a false sense of gentility keep the parent from allowing the children of both sexes to enter on the rough-and-tumble of their innocent plays. A doctor was called to attend the child of a refined lady. He saw before him a pale, sickly little boy, beautifully arrayed in an immaculate white dress. "My dear madam," the doctor bluntly and quickly observed, "your child is dying of over-cleanliness." Do not suppose that the doctor was in favor of dirt: no, he meant that to keep a child so intensely clean, was to deprive it of that healthful exercise and pleasure which children find in playing on the ground. The mother took the hint, and sent her child out to play, with fewer injunctions to her maid; and, not long after, she was delighted in seeing that the pallid cheek had acquired a rosy hue. If her sense of gentility was shocked, her heart bounded with joy to see her child in perfect health.

Many mothers object to girls romping. Those mothers should remember that the health of their girls is as important as the health of their boys, and that it will require no less exercise of the body, and pleasure of the mind, to preserve it. The great Dr. Abernethy, on being consulted by a mother in regard to the failing health of her young daughter, said, "Don't come to me; go buy a skipping rope."

HEALTHFUL EXERCISE.

To this we may add, let her run the hoop, play tennis, croquet, play horse, battle-dore and shuttle-cock. She will come in with a rush, her hair dishevelled, throwing it on one side with a jerk of her head, like a colt. She may not look like a lily peeping out of its leaf, but she will be vigorous, healthy, and robust; and, when older, she will not go to her parents with her headaches, backaches, and faintness. Excesses should be avoided, and the use of the swing forbidden: swinging determines blood to the head.

If the children come in too warm, let them not sit down in a cool room; if they come in hungry, do not let them eat, except after a little rest, when the circulation is quieted. Let them not drink a glass of ice-water while in profuse perspiration. Should they come in with wet feet, make them take off their stockings, plunge their feet in cold water for a minute or two, then rub them red and dry with a coarse towel: this treatment will prevent them from taking cold.

After the skin, the most active organ of the child is the stomach, and digestion the most important of all its functions.

Under the paragraphs on "Lactation," the subject of feeding an infant has been fully treated.

Dentition is, however, the signal for a new system of diet. From the moment when the child has four teeth, vegetable matter, such as bread, rice, sago, semoline, and barley, may be mixed with its milk; this will accustom the stomach to gradually receive vegetable food. Later, soft-boiled eggs, a tender piece of mutton or beef, the wing of a chicken, may be added, thus accustoming it to receive animal food.

A child should eat lightly, but oftener than fully grown people. Its digestion is quick, and its stomach requires quicker supplies. It is well to accustom the child to regular hours, but it should not go too long without food. If a child is hungry between its regular meals, a piece of bread and butter, or fruit, will satisfy the appetite, and not hurt it. If there are articles of food unfit for the child, it is cruelty to expose it to the temptation without gratifying him: therefore, a child under four years of age should not occupy a seat at the table with grown people, unless they select to have such articles of food as would be innocuous to the child.

IMPORTANCE OF REGULAR HABITS.

Great attention should be paid the evacuation of children. They should be induced to make the proper evacuations with regularity. When this regularity is established as a habit, it will be a great source of health and comfort during their whole life.

Children require a great deal of *sleep*. They are so active that they would become exhausted if sleep did not give them a good intermission of rest. But the sleep should be natural: it should never be induced by artificial or medical means, which are very dangerous to their delicate brain.

Never awake a child suddenly, for the surprise may cause a fright, to be followed by terrible consequences. When the child awakes, it should see familiar faces or things: the sudden presence of a stranger is sometimes enough to throw it into a fit. Children should go to bed early, and rise early; their bed should be rather hard than soft, and they should never be too heavily covered. Many poor children turn and toss in their crib, simply because the cover is too heavy or too warm for them.

The nervous system of a child is so impressible that care should be taken never to expose it to hideous objects. Do not startle a child with sudden brusqueness; do not relate to it unpleasant stories, or try to sub-

ject it to your will by threatening it with imaginary apparitions of monsters. The child will dream about these things, startle from his sleep with a piercing cry, and you will find him trembling with a cold sweat upon his brow. Such shocks predispose a child to water-on-the brain. Very susceptible children require great tenderness and a patient training to accustom them to the sight of objects which, however harmless, cause them terror.

School Days.—When children have reached the age of study, and you send them to school, remember that nature has provided that the organs should be developed before the mind; that the muscles require exercise for their development, and that the mind should not be forced beyond its capacity. Precocious children are seldom healthy. Do not sacrifice the body to the mind; for, if the former withers, the latter must wither also. While some application is necessary to the training of the mind of children, too much will exhaust it and render it feeble.

CHILDREN STUDY TOO MUCH.

A child, from the age of seven to twelve, should not study more than an hour at a time; each hour of study being followed by an hour of relaxation. Four hours a day of study is enough for a child of that period of life. The system adopted by the majority of schools is too confining. From nine to twelve, then half or one hour of relaxation, to return to the desk until three or four o'clock, is too exhausting.

Besides, the collection of many children in one room—particularly during the season when doors and windows are kept closed—will consume so much oxygen, and generate so much carbonic acid, as to make the atmosphere a perfect poison. When children are held for hours, with the mind intensely engaged, the body in complete rest, to inhale poisonous atmosphere, do you wonder that in time their bodies wither and their lungs become weak? The constant sitting in one position will affect the circulation of the stomach and intestines, and implant seeds of dyspepsia and constipation. Who was that well-intentioned fool that proposed Saturday as the proper day for children's weekly vacation? That brings two days of vacation together, while five are left for constant application.

Why not select Thursday? That would divide the labor more equally, and the day of rest would be just in time for the repair of wasted strength. A rested mind and a vigorous body will learn quickly: a few hours of application then will insure more proficiency than a day's

work of a tired body and an exhausted mind. In the latter case the health is impaired; in the former, preserved.

Every school should be provided with pleasure-grounds, and some apparatus for gymnastics in the open air, where children can find pleasure and exercise; and the teacher should never retain a child in school during hours of relaxation by way of punishment. While the teacher may be allowed means of discipline for unruly children, he has no right to use means that would impair their health.

HEALTH OF AMERICAN PEOPLE.

The American people, who have made a glorious and powerful nation out of a desolate continent in a few scores of years, have labored beyond their capacity; and the result is a deterioration in the health of their offspring. No country abounds so much in dysyepsia, insanity, consumption, and uterine diseases, as this glorious land. If American women are famous for delicacy of features, for fairness of skin, and suppleness of limbs, they are famous also for weakness and incapacity for physical labor. If American men have built cities in a day and fortunes in an hour, they have also filled Europe with valetudinarians, who are now in quest of health, and would willingly give for it all they have made in losing it.

The education of girls in this country is above the average of that of girls of other nations. This is undoubtedly owing to a very early and persistent training of the mind: but, while the mind is built up, the body has perished; and it is the common remark of natives and foreigners, that American ladies "do not last." In France, England, Germany and Scotland, a woman from thirty to forty is considered in the prime of her vigor and beauty; in the United States, she is *passée*—in other words, prematurely old.

Where could a Raphael, a Rubens, find in America models for their grander paintings? Where could Giulio Romano find a model for his giants? A glorious subject of martyrs could be found: they would not be martyrs of Christianity, but the martyrs of our schools; they should not elevate the cross as the emblem of their sacrifice, but a pedagague and a rod, with an emblazoned banner bearing these mottoes: "Late hours," "Ten hours' study," "One hour recreation."

Those who clamor for woman's rights would better clamor for woman's muscle. Let them cry against the onslaught upon girls in

schools, and not think that, because a woman can talk or address an audience, she can clear a forest, man a frigate, tunnel the Alps, build the pyramids. If, in refined society, man guards his woman with tenderness, and takes all the physical burden upon himself, it is not because he desires to appropriate to himself all the prerogatives of labor and liberty; for, where woman is his equal physically, she is allowed to share with him both labor and liberty.

Liberty means labor, as the redeemed slaves have found out. The women peasants of Italy, of Germany, France, or Scotland cannot complain of being treated like puppets. If only girls were made to have broad chests, good hips, developed biceps, as well as mental capacity, they would find labor and liberty without clamoring for a vote. The vote, however, appears to be coming, and will be here in due time.

Period of Growth. This is called so only relatively; for we know that the child grows from its very birth. After it has attained the twelfth year of age, however, the growth is so rapid, the organs hasten so fast to the completion of their development, that the time from that age to puberty has been styled "the period of growth."

DEVELOPMENT OF THE MIND.

This is the most important and interesting period in the human life; for, after this, the moral habits are formed, and the organs are shaped to a fashion in which they will remain ever after. It is during this period also, that the mind, heretofore passive and almost totally imitative, springs as from its cell into an existence of self-dependence, self-regulation, and gives evidence of originality of thought and conception. All the senses become more active; and one can notice the human being gradually breaking away from the anchor of parental control, and drifting towards the current of life, where it will ever after steer its own course. It is now that you will see the fruit of your early instruction; it is now that the imperfections will become apparent; it is now that artistic touches will be required lest the picture is a daub forever.

It is also at this period that latent diseases often develop themselves; and the offspring of parents who have died of tuberculous consumption need now the greatest attention, for in this condition of susceptibility the slightest indiscretion is often the spark that kindles a fatal fire in the young and tender body.

It has already been stated that this period is marked by very notable

changes, and particularly in the organs of generation. This development will infuse a new stimulus into the organism heretofore unknown to the child. It is not agreeable to our self-love to speak of ourselves as animals; but, unfortunately, our nature has an animal side which even our conceit cannot destroy.

Young men have a great advantage over girls in their youthful exercises: they always add pleasure to it. That is important. A walk will soon become irksome when it must be made in a particular street, under the surveillance of Miss "Propriety." A hearty laugh, a loud voice, so natural during that period of exuberant life, is quickly hushed up by the green eyes of that ignorant regulator.

FLOCKS OF "SICK CROWS."

I well remember, during my own boyhood in Italy, when it was the fashion among the rich classes in Europe to turn over the care and education of their children to seminaries, the long and pale faces, the timid, spirit-smothered boys, that used to file in procession through the streets and in the parks. The free boys would style them "the sick crows;" and in their sports those poor "crows" always come in last. They were buffeted and ridiculed by the young scamps, from whose every pore ran out energy, health and activity. The lessons of the "crows" would be well rendered, they were well drilled, no doubt; but the success in life was carried by the healthy, strong and disorderly crew of the free boys.

If young men have cricket, foot-ball, base-ball, hunting, fishing, boating, and innumerable games that cheer their mind and exercise their body, why should not girls have games and sports appropriate to their sex. Rowing is an exercise not only healthy, but graceful, for a woman. Swimming is as healthy and necessary to their life as to men's. Gymnastics can be adapted to their strength. Riding is exhilarating and very healthful.

Higginson well says: "Indeed, there is something involved in the matter far beyond any mere physical necessity. All our natures need something more than mere bodily exertion: they need bodily enjoyment. There is, or ought to be, in all of us a touch of untamed gypsy nature, which should be trained, not crushed." Even danger adds zest to our actions. The same author, alluding to gymnastics, says, "If it does you good you will enjoy it; if you enjoy it, it will do you good. With body, as with soul, the highest experience merges into pleasure."

Dancing is, without doubt, one of the most pleasurable exercises known. It is a period of intermission from the cares and sorrows of the world. It is an indication of a healthful state of body and mind. A mind borne down by care or grief, a body weakened by disease, cannot dance. If wholesome, where comes in the danger, then? It is not dancing that is injurious, it is the heated rooms, the excess, that re-acts unfavorably on the body; it is the current of cold air that is often allowed to rush through hot and crowded parlors; it is the heavy supper that is almost always the concomitant of hospitality.

The exercise of dancing increases the action of the lungs; hence girls should not wear tight belts or tight corsets. It exercises the muscles of the foot, which, therefore, should not be incased within narrow and unyielding shoes.

INCONSISTENCY OF HUMAN NATURE.

Morally, many object to dancing; to those I say, "*Honi soit qui mat y pense*" (evil to him who evil thinks). While the mind is engaged in the pleasurable and invigorating exercise of dancing, seldom does it plunge into unworthy and prurient thoughts. Many parents object to dancing who do not object to their daughter staying alone in a parlor with a young man, taking a walk or a drive with him. Strange inconsistency of human nature.

If you have confidence enough in the integrity of your daughter to allow her so much freedom, why should your confidence lessen when she clings to the arm of the young man dancing in your presence, and amidst your friends? The plea is given that a young girl cannot select her partner; that is a mistake. A sensible girl can so comport herself that only those that she prefers will ask her to dance. Seldom does a young man insist upon dancing with a young woman who has aversion to him.

The dance has always been a part of all joyful occasions. Dancing is an accompaniment to happiness. Sober men have danced at joyful news; Christians have memorialized their triumphs by a dance; the most innocent and upright people dance. Dangers surround us at all times, and wickedness can be concocted during a dance. So a lemon-peel has been the cause of a broken neck; yet lemons are retained as a useful article, and they have not been proscribed.

"There are many intelligent, excellent and conscientious people who think that dancing is an innocent and healthful amusement, tending to

promote ease of manners, cheerfulness, social affection and health of mind and body; that evils are involved only in its excess; that like food, study, or religious excitement, it is only wrong when not properly regulated; and that, if serious and intelligent people would strive to regulate rather than banish this amusement, much more good would be secured."—*The American Woman's Home.*

A very pleasing and useful study for a girl, one in which she can learn, amuse her mind and exercise her body, is botany. But a girl should not study botany on preserved leaves or flowers, or on beautiful colored plates, but in the meadows, on the hills, amidst the rocks. Her mind will be engaged in the search after a favorite plant, her body exercised in the effort to attain her object. This study would induce her to the cultivation of a home-garden; there she can dig, plant, trim, and love her flowers. She can dirty her hands and tan her face; but under these coatings there will be the glow of health. It will not be a lost lesson; for, when older, her knowledge of the plants and herbs will greatly assist her in assuaging the pains of the sick or supplying the needs of the poor.

WHAT DRESS IS INTENDED FOR.

Dress is not intended to be simply a cover to our nakedness: it has been invented in civilized countries as a protection of the body from vicissitudes of weather, and sudden changes from a high to a low degree of atmospheric temperature. Dress is to maintain within the body a certain amount of heat required for the circulation of our blood, the actions of our organs, muscles, and limbs. We know the effect of extreme cold on the human body, hence we can easily imagine that even in the intermediate degrees they must produce effects, which, although not instantly fatal, will, nevertheless, induce changes in our system incompatible with the laws of health.

The object in dressing being to prevent the evaporation of necessary heat from the body, it follows, that, according to the elevation or falling of the surrounding temperature, the dress must be adapted. To maintain this equilibrium, the body must be equally dressed all over.

As the temperature affects the circulation, it follows, that, when the dress is partial, the temperature is unequal, and the circulation, of course, unequal also.

From the moment the circulation is unequal, the blood flows more freely in one part than another. The part more exposed to evaporization

or to a lower degree of surrounding temperature, must have a circulation slower than the parts protected from both. The cooling of the surface is induced by the contraction of the capillaries, which drives the blood away from those parts, making them very sluggish, to other parts, very active. From the moment this fact is established, the equilibrium is disturbed, and the human machine deranged in its operations.

The great study of keeping a clock in perfect running order is to maintain the equilibrium of forces amongst the different parts. When one part, like the pendulum, chain, spring, or wheel, is differently affected by the surrounding temperature, the expansion becomes unequal, the equilibrium is lost and the clock is out of order. Philosophical mechanics have discovered this, and have used every skillful means to balance the gain and losses in the expansion of the metals, or by using metals of equal susceptibility, etc. If we are so careful with clocks, why are we not with ourselves.

APPARATUS FOR HEATING HOUSES.

Civilization, with all its wonderful apparatus for heating houses, will have done a great injury to mankind, unless it provides also the means to protect us when we leave our luxurious homes for the house of God, the open temple of his wonderful creation, where the sun is the only fire, and its satellites the only luminaries in its absence.

The transition from 70° Fahrenheit, within our abodes, to zero without, must be productive of sudden changes in our circulation, unless clothing prevents it, by being equally and sufficiently spread over the entire body.

The feet that touch the ground, which, in its cooled state, would absorb much of their heat, need adequate protection, else the equilibrium would be disturbed, and a cold would be the consequence. The dress of women is not calculated to protect their lower limbs and the abdomen as well as the upper part of the body: this is another great and general source of disturbance of that equilibrium. Those former parts become sluggish in their functions, and finally the seat of permanent derangement; the bowels become costive, the womb subject to congestions, congestions inducing painful menstruation, leucorrhœa, prolapsus, ulceration, etc.

The chest, or thorax, that contains our most noble organs, if not equally protected, will be liable to the same functional derangements.

The lungs being thus subjected to a flux and reflux, quite irregular, will become disorganized: coughs, sore throats, pleurisy, pneumonia, consumption, must follow. The heart, the recipient and propeller of the blood, must become deranged when this fluid is constantly varied in its flow.

If more blood is driven to it from the periphery of the body than its natural capacity can receive and propel, the heart must become enlarged and enfeebled; its delicate valves, that are to open or close according as the heart receives or expels, must become troubled, and finally disorganized; and then we have a frightful condition of things, which can only bespeak an early death. The liver, kidneys, etc., are subject to the same influences and the same risks.

Fine shoulders and alabaster bosoms are beautiful to see. On the same principle, you might bare other parts equally beautiful; fortunately, decency has put limits to such exhibitions. But why it should be more decent to expose a beautiful arm or bosom than a beautiful leg or thigh, is more than any philosopher can explain. Fashion, O, fashion! thou art the devil in sheep's clothing, indeed!

EFFECT OF PRESSURE AND TIGHT LACING.

As it is with partial exposure, so it is with tight lacing. Pressure drives blood away from the parts, the veins and capillaries being intensely elastic. Pressure not only prevents development of the parts, but actually causes absorption of the tissue. Tie a leg sufficiently tight to prevent the circulation of the blood for any length of time, and it will dwindle into an incredible smallness.

Commence early, therefore, in the education of dress. It is beautiful to look on the dimpled arms, chest, and legs of an infant; but think of the consequences! The idea that exposure makes them hardy is not bad; but then expose all parts equally, and do not keep them for eighteen hours in a temperature of 70°, and six hours in an atmosphere from 10° to zero.

If your manner of living forces you into these incongruities, see that your child goes out into the fresh air with a body equally covered. Bare legs and arms are not conducive to its hardiness when the other parts are heavily clad. Better that it should go naked, like the savages, and that your houses had no fire.

Mothers, read and think of this! It is truth. See to your infants.

Pleasure-grounds and shady sides have sent millions of little beings to a desolate grave. It is not the fault of the pleasure-grounds nor of the shady sides; but it is the sitting on the grass and on the earth of a temperature much lower than the body, when the clothes that come between serve only to cover it from sight, not to protect it from the absorption of its heat. If a child is lightly clad, spread a shawl or a cushion underneath: a grown person in the same condition would do the same; it is only those delicate little creatures that are allowed such careless treatment.

We all love to see children looking pretty, cunning, and attractive. Fashion does a great deal towards the attainment of this aim. Let us commence from the period that a girl-baby leaves off her long robes for the short skirts. The mother will take care that the baby's chest is well covered: the pretty limbs, however, will be exposed, the little stockings short, and the drawers made of cotton or linen, but thin. If the child goes out, "Nurse, put a sacque on the baby, and do not let her go out without her hat; it is cool to-day." Unless it is decided winter, no additional clothing is suggested for her limbs or abdomen.

The child goes out, sits on the grass or dirt, the temperature of which, being lower, robs the child of some of the heat from her legs and the lower part of her body. So the child goes from year to year, without much difference in her apparel; the dress of the lower half of the body being much less in proportion than the dress of the upper half. The putting on of an extra skirt does not help this difference a great deal. In a small child, the skirts are so short that I cannot consider their efficiency in keeping the child warm any better than an umbrella carried above one's head. The cold air must necessarily get under the skirts; and the warmer the body the quicker the air will rush up, on the principle of a flue. In this way the temperature of the body of the girl, from her waist down, is kept for several years lower than that of her body from the waist upwards.

The consequence is serious in the extreme. Every one knows that cold contracts the skin, veins, and arteries, and propels the blood from the surface. Put your hand in ice-water for a few minutes, and you will see it shrunk and colorless: the blood has been driven from it. This process is going on all the time that the child is less warm in one part of the body than in the other. In the coolest part, the circulation becomes slower as the blood is driven away.

DISEASES OF CHILDREN

CHAPTER XXIII.

IN a work of the present limits it is impossible to speak of all the ailments incident to women and children, therefore reference only is made to those of the most important and intractable character—the leading features of which are succinctly and faithfully presented. It is, however, not expected that females uneducated in medicine will be enabled to treat all the forms of disease mentioned in this volume. Diseases not unfrequently assume a very severe form, both in children and grown persons; hence the attention of some skillful practitioner will be promptly required, in order to maintain the *vis vitæ* (vital strength) of the organism from the ravages of the maladies.

Before entering upon the subject of children's special diseases, it will be necessary to treat of *irritation*, as it is a condition frequently occurring in children, and sometimes mistaken for inflammation.

Irritation, from *irrito*, to excite, is produced from some exciting cause operating on some part of the system, and thence extending to other organs or parts, through a law of sympathy. The younger and more delicate the child, the more susceptible is its constitution to irritating causes. For instance, the slightest pressure of the teeth against the dental cartilage or gum in an infant, is sufficient to produce the most alarming symptoms, such as convulsions, and other cerebral derangements.

Again, irritation of the bowels, liver, etc., will cause bilious derangements, diarrhœa, or cholera infantum, and a long train of other maladies. It is thus perceived that it is highly important to possess a correct idea of irritation, before attempting to combat either its effects or the diseases concomitant of its influence.

As a celebrated writer has well remarked, a knowledge of this influence is as essential to the medical practitioner as the compass is to the mariner. It is a guide to him in the detection of disease, and enables

him to use proper remedies for its removal, which he could not otherwise command. It will also prevent, in many instances, the use of depleting means with a view of allaying inflammation, when the system, in fact, is only under the influence of some morbid excitement or irritation. Unfortunately for patients, many acute diseases are treated as the result of some inflammatory action or organic lesion, and, accordingly the system is reduced by blood-letting and other antiphlogistic treatment, when the disorder is nothing more than simple irritation.

Many children, with naturally strong constitutions, are compelled to struggle through a course of treatment based upon inflammatory action. Thus it is that a large majority sink under such treatment. The bills of infantile mortality most abundently attest this fact. It is palpable that nearly all the diseases of children arise from irritation and not from inflammation; hence the barbarous system of depletion, in such cases, cannot be too severely condemned. It but adds injury to injury, or fuel to the flame, in order to extinguish it!

IRRITANTS TO BE AVOIDED.

Dr. Copeland, speaking of the Pathology of Irritation, observes, that if an irritant or stimulus acts upon a living tissue or organ, certain changes are produced. If the digestive organ be acted upon by an irritant, certain actions are increased or modified; while if the irritant be increased, the irritation is increased and extended to other parts. Any function of a part may be more or less modified by the application of an irritant, or be so disordered as to be completely overturned.

If a portion of the intestinal canal be irritated by mechanical or chemical stimuli, its contractility is augmented—the secretion and circulation of the canal more or less accelerated, and the sensibility increased, causing pain, in more or less degree of acuteness. In addition to these local changes, if the irritatives be increased, the influence is extended to different parts, through the medium of the nervous system.

In this way one organ is made to sympathize with other and more remote organs. Hence, an irritant applied to the stomach may extend to the intestines and produce colic pains; or to the liver, causing an increased flow of bile; or to the lungs, heart or brain and excite morbid action and distress.

Again, if an irritant be applied to the kidneys, it may produce not only symptoms of inflammation in them, but the irritation may extend to

the stomach, through the nervous connection, and cause vomiting; or it may extend to the genital organs, and greatly excite and injure them.

Similar sympathy may arise from teething, and produce vomiting, purging, griping, with green bilious discharges, as the result of the irritation extending to the stomach, liver and intestinal canal; or it may extend to the brain and spinal cord, producing convulsions and coma. Improper food taken into the stomach, or worms in the intestinal canal, produce similar symptoms.

External impressions, such as fear, etc., may produce convulsions, and symptoms of apoplexy, in children. Hood, in his work on diseases of children, gives two striking cases in this regard. A nobleman having anxiously desired a son to be born to him, in order to inherit his fortune and title, his wishes at length were gratified. Preparations were made on a grand scale for the infant's christening, which ceremony was to take place at night, in a brilliantly lighted room. When the child was brought in for such purpose, the sudden flare of light caused instantaneous convulsions, from which the infant soon after died.

FATAL EFFECTS OF FRIGHT.

The other was a case, also, where the first-born son of a noble family was to be christened. The bishop had arrived to perform the sacred rite, when the servants knocked so loudly at the door that the child was frightened, and died of convulsions in consequence.

Irritation when slight may be confined to the part, but cannot exist long without other organs experiencing the same disorder through the sympathetic and cerebro-spinal nervous system.

The more susceptible the nervous system, the more readily are these symptoms between the organs set up. This is well illustrated in the delicate female laboring under uterine irritation. The sympathy will extend from the uterus to the stomach, and produce derangement of that organ; to the heart, and cause palpitation; to the head, and produce neuralgia; or to other parts of the system, and thus excite the symptoms of a variety of other diseases. Flatulence in the stomach is a very common exciting cause of palpitation of the heart. So will deranged liver and stomach produce the same result. Hence, a physician should have a full knowledge of the law of sympathy before attempting to treat or remove disease from the organism.

In all organized beings, there is a natural or normal susceptibility,

called by some a normal irritability peculiar to the nervous system. This susceptibility is increased by debility of the nervous system, which makes the whole organism more susceptible to irritating causes. This is seen in a child with its health impaired by teething. It is then more liable to cold from exposure, particularly of the lungs. Mothers, accordingly, should never expose the tender infant's neck and arms, when their own systems would revolt at such unnatural treatment. Thousands of children are annually sacrificed by this foolish and cruel habit alone.

As children advance in age, the susceptibility diminishes, and there is less liability to irritability from exciting causes. We may compare the infant, by way of analogy, to the delicate shoot from the parent plant or shrub. It will wither and die from the slightest frost, while the parent tree or plant is not materially affected by the winter's blasts.

DIFFERENT TEMPERAMENTS OF CHILDREN.

There are some temperaments more liable to irritating influences than others. Children of the nervous and sanguine are more susceptible to irritabilities than those of the bilious or phlegmatic temperaments. The nervous and sanguine are characterized by light eyes and hair, and fair skin ; the bilious and phlegmatic have dark hair, eyes and skin. The former are much more susceptible to medicines than the latter.

The temperaments are sometimes mixed—the nervous and sanguine uniting, or the nervous and bilious, in the same individual. It is necessary that the temperaments of children be studied as well as their physiognomy. The latter is of the most importance to the medical practitioner. In fact, no physician can be successful in the treatment of children, unless he can diagnose from the physiognomy of the child.

It is said of the celebrated physician Andral, that he had such a knowledge of physiognomical presentations of diseases, that he could, by surveying the features of a patient, detect the disease lurking in the system, and point it out without questioning the patient.

The illustrious Haller expresses himself thus : "It is the will of God, the great Author of society, that the affections of the mind should express themselves by the voice, the gesture, but especially by the countenance. Nor is this species of language wholly denied even to the brute creation. They, too, by signs, express their love of kind, social friendship, maternal affection, or rage, joy, grief, fear, and all the more violent

emotions. A dog easily discovers whether you be angry with him, by your face and tone of voice."

The physiognomy of countenance has been ably treated by Lavater, who asks:—

"Does the human face—the mirror of the Deity—that masterpiece of the visible creation, present no appearance of cause and effect; no relation between the external and the internal, the visible and the invisible, and the cause which produces?" As to physicians, he remarks:— "The physiognomy of the patient frequently instructs him better than all the verbal information he can receive from the invalid. It is astonishing how far some physicians can carry their sagacity in this respect."

DERANGEMENTS OF THE STOMACH.

The author of the present volume was called, not long since, to see the son of a physician, who labored under a disorder that seemed to baffle all the remedies applied. The lad was about twelve years of age, of a sanguine temperament. The writer found him in a comatose state, in which he had lain for twelve hours. The remedies had been used without any effect, from a belief that the cause of disorder was confined to the brain. When the author saw the expression of his countenance, he came to the conclusion that the stomach was at fault.

This proved the fact on examination. A few cups and a blister to the stomach cured the lad before morning, to the astonishment of the father, who had looked upon the case as hopeless. An emetic would have afforded relief much sooner, but it could not readily be given owing to the coma.

Another case, equally striking, may be mentioned. I was called in haste by a physician, to consult with him in a severe case of cerebritis, or inflammation of the brain. The patient was a powerful and muscular man, mate of one of the Liverpool packets sailing out of the port of Philadelphia. He was over six feet in height, and weighed about two hundred and twenty pounds. He lay insensible in the bed, bedewed with a cold perspiration, his clothes as effectually saturated as if he had been dipped in a pool water. His pulse was about sixty, and very weak. His countenance indicated gastric derangement; on examination, my suspicions were verified. He was accordingly cupped over the stomach and consciousness speedily returned, and the next day he was well, except feeling a little weak.

Here are two striking cases, showing that an irritation of a local part had the power to affect the brain through a sympathetical influence alone. They will illustrate the importance of studying physiogomy in diagnosing diseases.

From an inspection of a child's countenance much information may be gained. If a child looks heavy about the eyes, has a pale face, and moves and rolls its head from side to side, and cries frequently, it is an evidence that it suffers from headache. If it frowns and dislikes the light, it shows some derangement in the circulation of the brain. If the pupil is dilated and remains so on exposure to light, we may rest assured there is congestion of the brain.

Should the pupil contract powerfully on exposing the eye to the light, it is evidence of irritation of the brain. If the features seem pinched (the muscles of the forehead contracted), and if there be bluishness around the upper lip, the edges of the nose and angles of the mouth, or if the legs be drawn up and the child screams and starts—if there be any or all of these appearances—they will present evidence of griping from flatulence or acidity of stomach or bowels.

EVIDENCE OF IMPOVERISHED BLOOD.

If the lips, tongue and mouth are dry, and there is a throwing of the hands back of the ear, it is an evidence of pain in the gums from teething.

If the child's flesh feels soft and flabby, blue veins appearing upon the forehead and between the eyes, and its features are pale, with little life or animation, it is evidence that the child has impoverished blood. In such children, according to Dr. Hood, there is danger of that alarming and fatal disease, usually called laryngismus stridulus or crowing respiration of infants.

The skin is also a guide. If it be bluish-white and "pasty" it is an evidence of the impurity of the blood; of a "dirty yellow," it indicates deranged liver. If the skin is dark and dry, it is an evidence of irritation in some of the vital organs.

The position of the child is also a guide to the physician. If it seems to be lying naturally, with its arms folded, and thighs drawn up toward its belly, and lying on its side, it is a sign that the child in doing well, and not suffering from any great amount of irritation or derangement of the system. These facts and views cannot be too attentively

considered by physicians and mothers, when treating the diseases to which children are subject.

TEETHING.—The protrusion of the tooth through the gum takes place at different periods in different children. As a general rule, they commence six months after birth, and end at two and half years. The first are called deciduous teeth, and are twenty in number, ten upon the upper and ten upon the under jaw. They usually appear in the following order:—

1st. Two lower incisors or front teeth.

2d. Two upper incisors. These usually appear from the sixth to the eighth month.

3d. The first lower molars or jaw teeth.

4th. The first upper molars. These usually appear from the twelfth to the sixteenth month.

5th. Lower canine or stomach teeth.

6th. Upper canine or eye-teeth. These usually appear from the fourteenth to the twentieth month.

7th. The four last molars or jaw teeth. These usually appear from the twenty-fourth to the thirtieth month.

THE PERIOD OF CUTTING TEETH.

Some children are very irregular in cutting their teeth. In a few instances they are born with their front teeth already cut. Sometimes the lower teeth appear before the upper ones; while some children do not commence cutting them until they are nearly eighteen months old.

Meckel mentions a case where there was but a single tooth to each jaw; and another case where there was none. It is more common, however, to meet with an excess than deficiency.

The cutting of the teeth may produce functional derangement in almost every organ of the body, through the irritation and pain occasioned by the pressure of the tooth against the sensitive dental nerves. The brain, stomach, lungs, liver, bowels, and, in fact, every organ and function may, separately or combined, become affected through this cause.

The mother, in most cases, is aware that the child is cutting its teeth, and familiar with the fact that its delicate system is liable to receive a severe shock from such cause. Hence the dread that mothers have for the second summer, which induces many to nurse longer than they otherwise would.

During dentition, the child becomes restless and peevish; the mouth is hot any dry; sometimes there is a free flow of saliva; frequent putting the fingers in the mouth; throwing the hands back of the ears; wakefulness and restlessness at night, etc. The irritation may affect other parts of the system sympathetically. This is more apt to be the case in weak and delicate children, because the system in such cases, is more susceptible to irritation than in those of robust constitutions. With some children the brain and spinal-nervous system particularly sympathize, causing convulsions, spasmodic twitchings, etc.

Sometimes the irritation extends to the lungs, producing obstinate and protracted cough; or to the stomach and bowels, causing sickness, vomiting, and looseness of the bowels. If the looseness of bowels is only moderate, it acts favorably by relieving the brain. Sometimes the irritation extends to the skin, inducing eruptions which may continue during dentition. The eruption is more apt to make its appearance behind the ears or upon the face.

USE OF MILD LAXATIVE.

Treatment.—If the bowels are inclined to be costive, they should be opened with some mild purgative.

I have found that a fourth or half drop of the tincture of nux vomica, administered two or three times a day, in a little water, to answer better in overcoming constipation than any other remedy.

Purgatives are always objectionable in constipation where there is a predisposition that way, as they are apt to render the constipation more obstinate than before. If purgatives seem necessary, magnesia or castor oil may answer the purpose.

The child should frequently be offered cold drinks, and its gums bathed with cold water. This may be done by saturating a rag with ice-water, and placing it frequently on the gums. Looseness of the bowels should not be checked unless it is such as to reduce the strength of the child, nor should eruptions be interfered with, for their appearance is often the salvation of the child. Dr. Parrish was in the habit of imitating Nature by blistering behind the ears, and keeping up a discharge, to the great relief of the child.

If the gum is hot, too sore, or too highly inflamed, the child should be induced to chew upon some hard substance, such as ivory or bone. When the gum is highly inflamed, and the tooth well advanced, the gums

may be divided with a lance or sharp knife. The incision should be made through the gum. If the tooth is not well advanced, it is best not to lance, on account of the edges uniting and forming a hard cicatrix, which makes it more difficult for the penetration of the teeth afterwards.

If alarming symptoms should occur, such as convulsions and incessant drainings from the bowels, attended with vomiting, there should be no hesitation in lancing the gums. It will often give immediate relief, by unloading the congestive capillaries of the gum and lessen the irritation. Sometimes it is necessary to lance after a portion of the tooth has protruded through the gum, in order to relieve it from pressing against the sharp edges of the tooth. This is the case with the eye, stomach, and front teeth.

If there should be sickness of stomach, two or three drops of camphor may be added to each dose, and a spice plaster applied to the stomach. If the discharge from the bowels continue, or the sickness at the stomach, from the irritation of the gum, a small blister behind the ear may afford some relief, providing the discharge is kept up.

TREATMENT FOR CONVULSIONS.

Some physicians recommend the administration of calomel for the green discharges from the bowels, believing it to be owing to some serious derangement of the liver. They should remember that the same sympathetic cause which affects the bowels and stomach, is extended to the liver, causing an increased secretion of that origin. Hence the bilious discharges. Morphine and aconite will generally break up this sympathy, and in that way diminish the discharge, which cannot be done by the administration of mercury.

Should there be convulsions the child should be set in warm water with a little mustard dissolved in it. The mere placing the feet in warm water will not answer. The lower part of its body and limbs should be immersed, and cold applications made to the head by saturating cloths with ice-water. The tooth should also be lanced at once, provided the gum is swollen and inflamed. It is surprising to find what instantaneous relief is sometimes afforded by lancing the gum. This process relieves the pressure on the dental nerves, and removes the bulk of irritation.

Sponging the child's head and face several times a day with cold water, will afford great relief, when there is much fever and hot skin. In

weak and delicate children, fresh country air will afford more relief and tend to keep down the irritation than all the medicine that can be administered. If the child cannot be taken into the country, it should be carried early in the morning into the open air, with its body well protected from exposure. It should be kept from the night air, while its sleeping chamber should be well ventilated.

Sometimes the submaxillary glands, which are located on the inner and lower surface of the lower jaw, will enlarge and suppurate if they do not receive attention. I have found that an emetic administered every three or four days, has a powerful tendency to promote the absorbents and reduce the swelling. Ipecac is the mildest and best emetic that can be used. From five to six grains in powder at a dose is sufficient to produce free vomiting. If the glands should continue to enlarge, the ointment of iodide of potash may be applied.

The child's diet should receive strict attention. If the mother's milk agrees with it, it will require no other nourishment. If it is not nursed, the milk from the same cow should be given, after being boiled. If the bowels incline to be loose, a cracker soaked in the milk and sweetened with loaf sugar, with a little nutmeg added, may be used. If the child is much debilitated, a little good Port wine may be added to the cracker victuals; or cream half diluted with milk may be given, and occasionally a few drops of wine with water and nutmeg.

DISEASES OF CHILDREN
(CONTINUED.)

CHAPTER XXIV.

CHOLERA INFANTUM, or Summer Complaint, is one of the most fatal diseases of children. It usually occurs during the first or second summer, frequently from the irritation attendant upon teething. Another frequent cause is improper food and the bad ventilation of the apartments in which the children, especially of the poorer classes of society, are compelled to live.

Symptoms.—The attack of summer complaint is usually preceded by diarrhœa, existing, in some cases, for some time previously with the patient. Sometimes the attack will be instantaneous, commencing with violent vomiting and purging. At times the stomach is so irritable as to eject every thing taken into it, even a mouthful of cold water; at the same time there are spasmodic pains in the stomach and bowels. The features become shrunken, the skin cool and clammy, the eyes half-closed; while there is partial insensibility and twitchings and starting. Insensibility may continue until it amounts to coma and death.

The disease may commence and terminate with these symptoms in two or three days, or a shorter period. In those fatal cases, attended with insensibility, there is a morbid condition of the brain. The attacks are attended usually with fever and quick pulse; the pulse is also weak or corded; the mouth is hot and dry; tongue furred; extremities cool, while the surface of the body and head is hot. If the attack is very severe, the child weakens rapidly; the eyes become sunken; the surface cool and pale, harsh and dry.

In some of the very severe cases, the mucous membrane of the mouth

and tongue takes on an aphthous or inflamed condition, the whole surface becoming covered with white ulcers or sloughs. Sometimes they present a dark-brownish appearance, which is indicative of great debility or prostration. Frequently an eruption appears upon the body, resembling flea-bites, called *petechiæ*. The skin also presents a dirty, dull hue, the eyes are blood-shot, while the emaciation is in the extreme.

The discharges from the bowels are as various as are the symptoms. At first they seem to consist principally of undigested food, such as curdled milk and other coagulated liquids. As they become more copious and frequent, they consist of yellow or yellowish-white secretion; or they may be green and slimy. During the disease they seldom present the natural fecal odor. The matter vomited is sour, slimy, and sometimes a yellowish-green liquid. The disease may continue for weeks or months, provided the exciting cause is not removed.

Causes. Unwholesome food, dentition, ill-ventilated apartments, and the increasing temperature of the weather, are the most prominent causes of the complaint.

FIRST STEP IN THE TREATMENT.

Treatment. The first step in the treatment is to remove the causes that keep up the irritation. The second is to allay the irritation. If it be the heated and impure atmosphere, the child should be removed to the country, if practicable If this cannot be accomplished, it should be kept as much as may be deemed advisable in the open air, during the day, by airings in the parks, excursions on the water, or in drives about the suburbs of towns and cities. I have known a day's trip on the river to arrest the most alarming symptoms, when all other curative means had failed. I have also known one day's confinement in a crowded and heated apartment to bring back the symptoms in their fullest virulence and force. Sometimes the mother's milk will disagree with the child. This it is sure to do if it contains cholostrum. The mother's anxiety of mind may also act as a secondary cause to render the lacteal fluid unfit for the child. For full information on this point, see the article on LACTATION, in another part of this volume. If the exciting cause be dentition, the treatment recommended in that article should be employed. If the mother's milk or her mental anxiety be the cause of the child's illness, a wet nurse should be procured, or a resort be had to artificial nursing.

If the teeth press against the dental nerve, and it be inflamed and

reddened, the gum should be lanced. For sickness of stomach, a spice plaster should be applied over the entire abdomen. I have known the spice plaster to act like a charm in allaying sickness and restlessness.

The foregoing treatment will answer in most cases where medicine will prove of any avail. There are cases in which all treatment fails. The child's salvation will then depend upon country air, in conjunction with the remedies presented. As a general rule, the gentler the child is treated, and the less medicine that is given, the better, to insure its recovery to health. Thousands of children are annually virtually slaughtered by over-dosing with medicine, instead of allowing Nature an opportunity of exerting her recuperative power in overcoming the difficulty.

SCARLET FEVER.—This is a disease of fearful mortality among children, in some seasons, leaving its desolating effects in many families, whether the affluent or humble.

VARIETIES OF SCARLET FEVER.

There are four varieties of Scarlet Fever—*Scarlatina Simplex*, *Scarlatina Anginosa*, and *Scarlatina Maligna*—usually described by writers. We present another form, frequently met with, called by some *Scarlatina without eruption*.

All these forms are one and the same, only manifesting different degrees of severity. In some cases, they are so intimately blended that it is almost impossible to designate to which division they belong.

The first and last divisions are attended with but little danger and usually run their course in four or five days.

The other two forms, if not treated early, will terminate in gangrene, sloughing and fatal disorganization of the throat and larynx.

Scarlet fever is more prevalent in the fall and winter, and usually occurs in children after dentition and before puberty.

Scarlet fever is often mistaken for other febrile diseases, particularly measles. It may be distinguished from measles from the absence of the catarrhal symptoms, which always accompanying the latter. The rash occurs earlier in scarlet fever than in the measles. In the first, it makes its appearance on the second day ; in the other, usually about the fourth day. Scarlet fever is also accompanied with sore throat and redness of the fauces. In scarlet fever, the eruption makes its appearance in a small rash, which runs together in patches. In measles, the eruption

consists in small circular dots like flea-bites, that cluster together. The rash in measles is not near so red as in scarlet fever.

Scarlatina Simple X.—Chilly sensations, or shiverings, succeeded by frequent pulse, headache, nausea, and slight soreness of the throat. In about two days or forty-eight hours, the eruption makes its appearance upon the face and neck, and gradually extends to the body and extremities. The eruption consists of fine red pimples which seem to run together and extend over the whole surface of the body. After the eruption makes its appearance the unpleasant symptoms, such as nausea and oppression at the stomach, subside. On the fourth or fifth day, the eruption has run its course, when the skin desquamates and convalescence occurs.

SYMPTOMS VERY PRONOUNCED.

Scarlatina Anginosa.—In this variety the symptoms are more strongly marked than in the foregoing. The chilliness is greater, the pulse stronger, there is more nausea and vomiting, the throat is very sore and deglutition or swallowing difficult and painful. The tongue is covered with a white or yellowish fur; the fauces, throat and tonsils are swollen, inflamed, and ulcerated; the voice thick and hoarse, with difficult breathing and slight cough. There is severe headache, the eyes are swollen and injected, while there is stiffness of the neck and tenderness of the abdomen and stomach.

The eruptions do not usually make their appearance as soon as in *Scarlatina Simple X;* but occur from the second to the fifth day, and are uniformly diffused over the whole body, or in blotches. If the disease terminates favorably, the eruptions commence subsiding about the sixth or eighth day, and gradually convalescence is established.

Should the eruptions extend down into the stomach and bronchi instead of extending out under the skin, all the symptoms become more aggravated; inflammation of the stomach, bronchi, and brain supervene, which, if not speedily arrested, terminates fatally. In this disease the inflammation ranges higher than in most other febrile diseases, with a strong, bounding pulse.

Scarlatina Maglina.—This is the one of the most dangerous diseases the physician has to contend against. It usually commences with the ordinary train of symptoms, as indicated in the last form, but very soon gives way to those of a typhoid character, producing great prostration of the system. The pulse becomes less frequent, and weak; the

skin, instead of assuming a bright red appearance is pale; the heat subsides below the healthy standard; the eye becomes dull and suffused; the throat covered with ulcers of a pale ash color; the fauces and larynx becomes swollen and inflamed, as well as the bronchi; an acrid discharge passes from the nostrils, and the tongue becomes dry and of a dark mahogany hue, followed by diarrhœa and hemorrhage.

The disease may also extend to the brain, as well as the abdominal viscera, causing coma and death. The ulcers of the throat often slough, destroying or involving the soft part and cartilages of the larynx.

In some cases of scarlatina maglina, the eruption does not make its appearance upon the surface of the body. In others, a few blotches make their appearance and disappear. In another class of cases, most alarming symptoms occur, as it were, all at once, overwhelming the *vis vitæ* of the system in a few hours, and causing death.

ABSENCE OF ERUPTIONS.

Scarlatina without Eruption.—During the prevalence of scarlet fever, there are cases of fever and sore throat, which seem to run the exact course of the disease. These are said to be capable of imparting scarlet fever.

Cause.—Scarlet fever no doubt results from a morbific contagion. This contagion is no doubt diffused through the atmosphere, occurring in some sections of country an epidemic. Persons of all ages are liable to the disease—adult females more than adult males, and children more than either of the other two. It is, however, more fatal to males after puberty than to females after menstruation. There is only small liability to the disease after the age of fifty.

Without doubt, scarlet fever, like measles, depends upon an infusoria which locate in the mucous membranes of the fauces, and either follows the course of the mucous membrane into the stomach and air passages, or travels out under the epidermis or outer layer of the skin.

The idea of the rash striking in after it makes its appearance, is an absurdity. The basement membrane of the skin and mucous membrane is a matrix in which the infusoria seem to be rapidly nourished. Its usual course is outward, under the epidermis. In the malignant form of the disease, it follows the course of the mucous membrane, involving the stomach, bowels, and lungs, which being vital organs, must produce disastrous effects upon the system.

In maglignant forms the system is more susceptible to its influences. The rapid development of infusoria causes ulceration and sloughing of the mucous membrane of the throat, if such development be not speedily arrested. This may be readily done, if the proper means be adopted, as we shall presently show.

Scarlet fever is always worse in low, damp, and badly drained districts. It has been noticed that feather beds, woolen bed clothes, etc., when not exposed to fresh air will retain for a long time the contagion.

Belladonna and chlorine are no doubt preventatives in scarlet fever. My own experience fully satisfies me of this fact. I have always met with the happiest results from their employment. I have also noticed that where belladonna has been used, and the individual took the disease, it always assumes a very mild form.

HOW TO TREAT THE FEVER.

My plan of administering belladonna is in three drop doses, three times a day, having the house well ventilated and chlorine used to purify the air of the room.

Treatment.—If there be difficulty in swallowing, if the throat and tonsils are inflamed and swollen, if the face be injected and there be suffusion of the eyes, with strong bounding pulse and dry skin, I administer an emetic and produce free vomiting. This will reduce all these symptoms and afford a more prompt action for other remedies.

Emetics may be usefully employed during the course of the disease if there be swelling of the throat and other urgent symptoms; or if there be evidence of insensibility or coma, or sickness of the stomach—thus relieving the brain, and eliminating the bilious and acid secretions, the one being the cause of coma and the other of the nausea, etc.

Sometimes emetics will fail to act, owing to too great a depression of the vital energies of the system. In such cases I usually combine with ipecac one grain of Cayenne pepper, or a teaspoonful of brandy may be administered; either of which will wonderfully assist the ipecac in producing free vomiting.

After the stomach is freely evacuated and the bowels acted upon, take a solution of the chloride of lime, one ounce to the pint, and swab out the throat and mouth with it, provided the child is not too young to apply the gargle. The swab may be made by tying a piece of rag around a stick.

If a little of the solution should happen to be swallowed, it will be a benefit rather than a disadvantage to the patient. This swabbing should be repeated twice a day. The child's body should also be sponged night and morning with the same solution. This will destroy the infusoria, and thus relieve the throat and mucous membrane of the irritating cause. It will also deaden the eruption of the skin, which is also keeping up the irritation and promoting the fever.

There is one important point to be mentioned in connection with the treatment of the malignant forms of Scarlet Fever. When I find that there is a constant tendency to swelling of the throat and ulceration, I always administer an emetic, while if the bowels are inclined to constipation, I act gently on them. I afterward commence at once with quinine, and the chloride of lime wash.

PROMPT TREATMENT REQUIRED.

If there be an increase of pulse and fever while using quinine, I either reduce the dose of quinine, or continue it as before, in connection with another emetic. This plan will soon relieve the system.

There is sometimes difficulty in getting children to take this preparation. In such instances, the tincture of orange peel may be substituted for the tincture of cinchona. With the treatment here presented, there will be no difficulty in curing the most malignant forms of Scarlet Fever, provided the treatment is commenced before the contagion has completely overwhelmed the *vis vitæ* (vital strength) of the system.

MEASLES.—This is an eruptive disease occurring in childhood. It sometimes attacks grown persons—and usually more severely than children. Like scarlatina, one attack will generally secure the individual against the same disease again.

Symptoms.—The symptoms at first are very similar to ordinary catarrh, commencing with chilliness, running of the nose, red and watery eyes, slight soreness of throat, cough, soreness and pain in chest, difficult breathing, great heat and thirst, nausea, headache and sneezing are the prominent precursory symptoms. These symptoms continue four or five days, after which the eruption makes its appearance. It commences generally upon the face, usually the forehead, and gradually extends downward to the neck, breast, back, and finally to the lower extremities.

The more profuse the eruption the higher the fever, which continues unabated until the eruption begins to subside; which is usually in four

or five days. On the ninth day they disappear, when bran-like scurf is cast off from the skin. During the course of the disease, the cough is troublesome, which is occasioned by the contagion attacking the air passages.

The eruption makes its appearance in small scattered red spots, in the centre of which spots we find a small pimple, looking like small flea-bites, about the size of a small millet-seed. These, as they grow, unite into red spots. They rise above the skin, and feel rough if the hand is rubbed over its surface.

Measles may occur at any time from three days to three weeks after the child has been exposed to the contagion. It, however, usually occurs from the seventh to the fourteenth day.

THE ATTACK OF MEASLES.

Measles may be mistaken for an eruption occurring in dentition, accompanied with the usual symptoms of cold, such as sneezing, running of nose, redness of eyes, etc. The eruption which resembles measles, usually makes its appearance on a different part of the body from measles, commencing first on the back and stomach. This eruption is of comparative little consequence, and depends on derangement of the stomach or bowels. With proper treatment and diet, it will disappear in twenty-four hours.

The difference between Scarlet Fever and Measles is well marked. The primary symptoms of Measles are sneezing, running of nose, cough, hoarseness, red and watery eyes. These are wanting in Scarlet Fever.

The eruption from Measles appears in spots looking like flea-bites, which run together in patches of a semilunar shape, while Scarlatina-rash consists of minute pimples, diffused all over the body, producing a bright red color. There is also a roughness of the skin in Measles which is not observed in Scarlatina. The color of the eruption is also different—Measles being of a purplish or dark scarlet, while Scarlet-rash is of a light scarlet color. There is a form of Measles called Rubeola Nigra or Black-Measles. They depend upon a low condition of the vital powers of the system. A similar condition of system is observed in Malignant Scarlet Fever.

Cause.—Like all other contagious diseases, Measles depends upon a species of Infusoria which locates in the air-passages, and are there nourished as in Scarlet Fever. They pass out under the epidermis or

outer coating of the skin, as in Scarlet Fever, or they may pass into the air-passages and lungs, and thus produce inflammation, and plant the seeds of consumption, particularly when they occur in grown persons with weak lungs.

If the vital powers of the system are low, they exert a greater influence, while the symptoms are likewise more violent.

Treatment.—Measles, in ordinary cases, require but a little medical treatment. The only danger to be apprehended is from the damage which may be done to the lungs by the passage of the infusoria down into the air-passages, instead of passing out under the epidermis.

The bowels should be kept regular, and the patient moderately warm. All warm drinks and emetics must be avoided, as their tendency is only to increase the fever and eruption, by favoring the development of the contagion.

REMEDIES FOR THIS DISEASE.

Pulsatilla is especially adapted to Measles—as much so as Belladonna is to Scarlet Fever—and may be given to children that have not taken the measles in the same family where the disorder exists. If it does not prevent the occurrence of measles, it will make the symptoms much lighter than they would be otherwise.

After the eruption disappears in measles, the skin is often found to be harsh and dry. If a tepid bath be taken and the skin well rubbed, it will change its character and afford great relief to the patient. When the eruption disappears and leaves a dry, hacking cough, it should be removed as speedily as practicable, otherwise it may induce obstinate bronchial inflammation and consumption.

CROUP.—It is only within the present century that a distinction has been made between Whooping-cough, Asthma, Bronchitis and Croup. Formerly they were regarded as one and the same complaint. By the light of modern science, however, we are enabled to distinguish a marked difference between these varieties of disorders.

Under the old treatment of blood-letting and other depletions, Croup becomes a formidable disease. By the modern method it may be readily subdued and eradicated. It is a disease that seldom occurs after the age of eight years.

Cause.—Croup sometimes appears to be an epidemic, and is more prevalent in low, ill-drained localities. Exposure to cold, damp wind is

a frequent cause. If a child is attacked once with the Croup it is apt to occur again. The attack seems to leave a susceptibility in the lining membrane of the larynx, trachia and bronchial tubes.

Symptoms of Croup.—Croup is usually divided into two forms—Catarrhal Croup and Pseudo-membraneous or false membranous Croup. These two forms may exist at the same time, and it is difficult to distinguish them in the commencement of the disease.

Catarrhal Croup—sometimes called *Spasmodic Croup*—usually develops itself suddenly. The child, on waking from sleep, gives utterance to a peculiar, shrill-sounding cough, somewhat similar to the crowing of a cock. Sometimes it is preceded with a dry cough and hoarseness for some days previous. There is considerable dyspnœa, or difficult breathing, which is very distressing. The voice is also rough and hoarse.

CROUP AND ITS USUAL SYMPTOMS.

Pseudo, or False Membranous Croup sometimes assumes this form from the commencement. At other times it is ushered in with the symptoms of Catarrhal Croup, and thus it is impossible to distinguish them until the false membrane has commenced forming, when the voice becomes whispering, and the cough changes from a ringing or sonorous to a husky sound.

Whenever the voice cannot be raised above a whisper and the fauces reveals white paches of exudation, we may be assured that it is the worst form of Croup. As the disease advances there is great difficulty in breathing, much anxiety of countenance, and an impossibility to raise the voice so as to be distinctly understood, with swelling of the throat.

Treatment.—As soon as Croup is detected, which is generally at night, about or little after midnight, the child should be immediately taken into a warm room and placed in a tub of warm water, about blood-heat, while a towel wet with cold water and wrung out should be applied to the throat, and frequently repeated.

Should the cough continue for several days, a spice plaster placed on the chest, will afford great relief. If the disease seems spasmodic, keep the child nauseated with ipecac or tincture of lobelia, or pulverized lobelia mixed with syrup. This treatment will seldom fail to be successful in catarrhal croup. If a false membrane has formed the outlook is not so favorable.

The best preventive of croup is to sponge the child's body daily with

cold water, the year round, and rub it dry with a coarse towel. The child should be warmly clothed, especially its throat and neck protected from damp, chilly atmosphere. Its feet, also, must be kept warm and dry.

Whooping Cough.—Writers generally recognize three distinct stages of whooping cough.

1st. *Forming Stage.*—The symptoms are similar to ordinary catarrh, such as sneezing, dry cough, watery eyes, headache, oppression in the chest, fever, etc., which continue two or three weeks, when the second stage commences. This is called—

2d. *Convulsive Stage.*—During this stage the cough is paroxysmal, of a convulsive and suffocative character. The peculiar whoop is caused by the spasmodic contraction of the glottis, giving rise to suffocation and difficult respiration during the paroxysm. The paroxysms of coughing usually continue from one to five minutes, at the termination of which there is usually vomiting and expectoration of ropy mucus. The convulsive stage generally lasts from five to six weeks, when the third stage commences, which is called the—

3d. *Declining Stage.*—At this stage the symptoms are less severe and the paroxysms less violent, and in the course of two or three weeks the disease disappears.

Causes.—The causes, like those of scarlet fever and measles, are dependent upon a peculiar miasma, that affects the individual but once in his life-time. The system is made susceptible to this influence by colds, diseases of the respiratory organs, debility, fatigue, etc. When the disease occurs at the latter end of the Spring, it usually runs its course with comparative mildness. When it commences at the latter end of Autumn, during the Winter, or beginning of Spring, it is more trying to the patient—the Eastern and Northerly winds aggravating the cough and keeping up the irritation of the air passages.

Sponging the chest and arms with salt and water or vinegar and tepid water, followed by friction, will also be found of great service in shortening the disease. Change of air is an effectual remedy when there is debility.

PROMOTING AND PRESERVING HEALTH.

CHAPTER XXV.

CONCERNING the necessity of pure air for the preservation of health, this is admitted by all, and appreciated only by few. In the construction of dwelling-houses, the same want of regard to this subject, with here and there an exception, is manifest that existed forty years ago. In the northern parts of our country great pains is taken, by tight rooms and double windows, when they can be afforded, for shutting the air out, but no provision is made in way of regular supply for letting it in.

Very extensively in our farming districts the open fire-place, sometimes broad enough for a rousing fire of wood four feet long, besides a row of children inside the jamb, has given place to the close iron stove. The large open fire, when in brisk action, secured an adequate ventilation, while the close stove requires only air enough for the combustion of the fuel within. One stove often answers for the whole family, during the cold season. The warming, cooking, and washing are all done in one room. The exhalations from the cooking-vessels, and from the lungs and persons of the whole family, are all mixed together, and breathed over and over, to sustain the movements of life.

Is it to be wondered at that consumption is, as I am assured by some of my friends, far more common among the Green Mountains of Vermont than it was before the close stove was generally used, as now, instead of the open fire?

In our cities and large villages many a lady, who has the windows of her sleeping rooms opened for a short airing once a day, supposes that nothing more is necessary for the twenty-four hours. Speak to her on the importance of ventilation,—she agrees with you, remarking that her chambers are always ventilated every day. How surprised she would be, on being assured that seven to ten cubic feet of air per minute to each individual in an apartment should be admitted, in order to maintain its atmosphere in a state fit for healthy respiration.

In sickness, no sanitary influence is of more value than pure air. This is especially the case in fevers. In typus, typhoid, and eruptive fevers, the exhalations from the bodies of the sick are sometimes so intense as to cause nausea and vomiting among the attendants. Soon after I commenced the practice of medicine, I had a patient, sick with typhoid fever, who was ill cared for, in a badly ventilated room. At one of my visits I inhaled effluvia so offensive as to create a nausea that lasted two hours. Within five days I was attacked with a similar form of fever, which confined me to my chamber for six weeks.

HORRORS OF A SMALL-POX ROOM.

Some years since, at Baltimore, I received a horrid impression, which I can never forget, from looking into a room, apparently wholly unventilated, containing ten colored men with small-pox. In one of our large cities I was requested to look in upon my friend, the Rev. Dr.—, who, I was told, was sick with scarlet fever. I found him in his bed, which lay up snug in one corner of the chamber, although it was a large one.

He was surrounded by bed-curtains, with an opening sufficient to allow his friends to peep through and see him. I left the chamber with the impression that he would die of that sickness, as he did. In unpromising cases, the favorable change in the symptoms, when the patient, sunk and apparently near to death, is transferred to a cleanly and well-ventilated apartment, is sometimes very striking.

I was once requested to visit two patients, sick of typhoid fever, which for several weeks had prevailed in the neighborhood. One was a girl of sixteen, whose life was despaired of by her physician. She lay in a small bedroom without a window, the door of which opened into a larger room warmed by a close stove, the smoke-pipe of which communicated with the chimney through a fire-board that shut from the room a

large fire-place. The poor girl lay unconscious, the mouth open and dry, the eyes half open, turned upward, motionless and glassy.

I made a remark that the prospect for life of the patient, in that small place, with little else to breathe but the steam of her own body, was to my mind very much like that of the persons whose bodies had recently been laid in the burial-ground hard by. This remark, if it seemed harsh, had the effect to promote a ready observance of the suggestions which followed. She was to be removed to a clean bed in the large room, the stove and fire-board to be taken away, and a brisk fire made upon the hearth, as the weather was then cold,—the patient to be fed in the small way, with diluent and farinaceous drinks, and to be covered with sufficient bed-clothing. In two or three hours consciousness returned. This was in the afternoon. She slept several hours that night, was comfortable the next day, and had a rapid recovery, almost without medicine.

IMPORTANCE OF VENTILATION.

The other patient, in the same house, had been sick several days,—his case not very unpromising, except that he had been daily getting rather worse. He was in a small chamber, warmed by a close stove. This and the fire-board were removed, and the room kept well ventilated. He, too, recovered under good nursing. How impotent is medicine in such cases, compared with pure air.

Dr. Thayer, in his Report on Practical Medicine, read at the annual meeting of the New Hampshire Medical Society, remarking on the importance of ventilation in the treatment of disease, refers to the case of a large number of "emigrants, who arrived at Perth Amboy, from Liverpool, with ship fever, and who, for want of sufficient accommodation, were placed in shanties where they were exposed to the pure air, the buildings being so loosely constructed that they admitted the rain. Of the whole number of eighty-two patients not one died; of four others, who were removed to an ordinary dwelling-house, and who were subjected to precisely the same medical treatment, two died."

Notwithstanding the increasing interest felt upon this subject, there is probably not one building in a hundred in our large cities, that is erected with due reference to ventilation. Churches and lecture-rooms and court-rooms, with but rare exceptions, are fitted up to seethe an assembly in the noxious exhalation from two or three thousand pair of

lungs. I have seen a chief justice, in a large court-room, fast asleep on his high bench. How could he help it? He had been inhaling, for several hours, the oppressive vapors of two hundred human lungs and skins, unloading themselves of their nauseous animalized odors, mixed with liquor and tobacco.

The influence of sunlight upon organic developments, and its necessity in the maintenance of health, seem not to have been extensively enough appreciated. From want of this vivifying power, the nutrient juices are deteriorated, the human countenance becomes pale and waxy, and some form of chronic disease is liable to follow. Sir James Wilie, for many years physician to the Emperor Alexander and Nicholas, of Russia, remarks that in a certain barracks at St. Petersburg the mortality on the dark side—that from which the sunlight was always excluded—was four times greater than on the side on which the sun shone and penetrated into the windows and doors of the apartment; and this, notwithstanding that equal attention was paid to ventilation on the two sides of the institution.

SUNLIGHT AS AN AGENT OF HEALTH.

At the annual meeting of the New York State Medical Society, Dr. Augustus Willard, President of the Society, gave an excellent address on the subject of Air, Exercise and Light, in relation to health; in which are presented, in an impressive manner, the claims of sunlight to a high place as a hygienic agent. The experience and remarks of that intrepid explorer, Dr. Kane, in his two Arctic expeditions, are referred to as strongly supporting the position.

"At the withering temperature, sometimes of 60° and 70° below zero, Dr. Kane and his companions passed two years nearer the north pole than had been, in modern times, the wintering place of any voyager before them. They had a night of total darkness of more than two months in each winter. For one hundred and twenty-four days the sun was below the horizon, and one hundred and forty passed before his rays reached the rocky shadowings of the brig. Animal life languished. Dr. Kane, under date of December 20,—the day preceding their "soltitial day of greatest darkness,"—makes the following record:—

"In truth, we were all undergoing changes unconsciously. The hazy obscurity of the nights we had gone through made them darker than the corresponding nights of Parry. The complexions of my comrades,

and my own, too, were toned down to a peculiar waxy paleness; our eyes were more recessed, and strangely clear. Complaints of shortness of breath became general; our appetite was almost ludicrously changed, . . and our inclination for food was at best very slight; more than this, our complete solitude, joined with the perpetual darkness, began to affect our *morale*."

January 22. "I long for the day. The anomalous host of evils which hang about this vegetating in the darkness, are showing themselves in all their forms. My scurvy patients,—those, I mean, on the sick list,—with all the care it is possible to give them, are, perhaps, no worse; but pains in the joints, rheumatism, coughs, loss of appetite, and general debility, extend over the whole company. We are a ghastly set of pale-faces, and none paler than myself."

DISEASE CAUSED BY DARKNESS.

In his second expedition, Dr. Kane notices the same influence of darkness in causing disease; and most of his dogs, "although the greater part of them were natives of the Arctic circle, died of an anomalous form of disease, to which," he believes, "the absence of light contributed as much as the extreme cold."

Under all the privation and suffering endured by these ice-bound explorers in the dreary polar night, it is natural that they should greet with joy the approach of day. Says Dr. Kane: "the day is beginning to glow with the approaching sun. The south, at noon, has almost an orange tinge. In ten days his direct range will reach our hill-tops; and in a week after, he will be dispensing his blessed medicine among our sufferers. The coming sun will open appliances of moral help to the sick, and give energy to the hygienic resorts which I am arranging at this moment.

"For the last ten days we have been watching the growing warmth of the landscape as it emerged from the buried shadow through all the stages of distinctness of an India-ink washing, step by step, into the sharp, bold definition of a desolate harbor scene. We have marked every dash of color which the great painter, in his benevolence, vouchsafed us; and now the empurpled hues, clear, unmistakable; the spreading lake, the flickering yellow, peering at all these poor wretches! Everything superlative lustre and unspeakable glory."

"I saw him (the sun) once more," says he, "and upon a projecting

crag nestled in the sunshine. It was like bathing in perfumed water." Arctic voyagers are very subject to scurvy. That this liability is largely owing to the privation or scanty supply of sunshine can hardly be doubted; while the diet and the extreme cold contribute to the deterioration of the blood.

The convicts in our penitentiaries, who enjoy but little of direct sunshine, make a singular impression upon the mind of a stranger who attends their chapel worship Sabbath morning,—their hair sheared close upon their heads, and row upon row of expressionless, waxy faces, without a spot of rouge or tint of a brunette upon one of them.

The physiological influences of an Arctic climate impress the conviction that it was never designed for the comfortable residence of human beings. What a mistake, that sunshine must be shut out of our houses, and parasolled away from the face, neck, and arms of our women, from the lady of the parlor to the girl of the wash-tub.

SLEEP A NECESSITY.

It is a law of the animal economy in man and all the inferior tribes, that some part of the time must be passed in sleep. This seems to be necessary for the renewal of nerve-power, expended under the excitements of the waking period, and for restoring the equilibrium of blood-distribution in parts which, during the same period, have been most exposed to changes of temperature, or enfeebled by extra exertion.

In infancy, the nervous power is largely employed in the processes of building up the organs; hence a great part of the time is passed in sleep. Night sleep is more refreshing than day sleep; and this must be true even when daylight is excluded from the sleeping-room. It has been asserted that the atmospheric electricity, from eight o'clock in the evening till four the following morning, has less protective influence over the human nerves than at any other period of the same length in the twenty-four hours; that at eight o'clock, P. M., the positive electricity begins to wane; that it sinks to its minimum from twelve to two, and is reëstablished at four. Be this as it may, it is a noteworthy fact that in severe forms of disease, as croup or cholera, the attack is either made in that period, or the symptoms aggravated, if the disease had already existed.

Two colonels in the French army had a dispute whether it was most safe to march in the heat of the day, or at evening. To ascertain this

point, they got permission from the commanding officer to put their respective plans into execution. Accordingly, the one, with his division, marched during the day, although it was in the heat of summer, and rested all night; the other slept in the day, and marched during the evening and part of the night. The result was, that the first performed a journey of six hundred miles without losing a single man or horse, while the latter lost most of his horses and several of his men.

How many hours should be expended in human sleep? Putting infancy and old age out of the question, the remarks of John Wesley are worth considering. He says, "If any one desires to know exactly what quantity of sleep his own situation requires, he may very easily make the experiment which I made about sixty years ago. I then waked about twelve or one, and lay awake for some time. I readily concluded that this arose from my lying in bed longer than nature required. To be satisfied, I procured an alarum, which waked me the next morning at seven, near an hour earlier than I rose before; yet I lay awake again at night.

JOHN WESLEY AN EARLY RISER.

"The second morning I rose at six; but, notwithstanding this, I lay awake the second night. The third morning I arose at five; but nevertheless I lay awake the third night. The fourth morning I rose at four (as by the grace of God I have done ever since), and lay awake no more. And I do not lie awake, taking the year round, a quarter of an hour together in a month. By the same experiment (rising earlier and earlier every morning) may every one find how much sleep he really wants." Wesley's period was six hours.

Hon. Joseph Story, an eminent jurist of the United States Supreme Court,—an indefatigable student,—required, as he believed, eight hours of sleep. From six to eight hours may be regarded as the proper part of the twenty-four to devote to sleep. Sleeping too much, like sleeping too little, enfeebles and prostrates. The man who eats too much requires more sleep to rid him of the excess than he who eats just enough to supply the healthy wants of his organs. He is a loser in two ways,—he works the machinery of life too hard, and gets a less refreshing rest than needful.

Carnivorous animals sleep, it is said, more than the vegetable-eaters. They are day-sleepers, dozing away the time till night, and then prowling abroad in quest of their prey. John Wesley's great self-control in eating

and drinking aids in explaining his six hours' complement of sleep for sixty years, under the extraordinary amount of labor which he accomplished.

In dreaming, the feeling of surprise is never present. Let the elements of the dream be ever so incongruous, let the personages dreamed of be individuals long since dead, the dream goes on in a *bona fide* manner—the incongruity never once thought of.

The lapse of time in dreams is not appreciated as in the waking state. A dream may run through the mind in a minute, which seems to the dreamer to have occupied days, or even years. A person who was suddenly roused from sleep by a few drops of water sprinkled in his face dreamed of the events of his entire life, in which happiness and sorrow were mingled, and which finally terminated in an altercation upon the borders of an extensive lake, into which his exasperated companion, after a considerable struggle, succeeded in plunging him.

ABSURDITIES OF DREAMS.

Opium, in certain doses, increases the absurdities of dreams. I knew a physician, several years since, who, under an attack of inflammation of the lining membrane of the stomach, had but very little sleep for about two weeks. A distinguished medical friend from a distance visited him, and prescribed a large dose of laudanum, to be given by injection. The patient had a disturbed sleep, and a dream which made a strong impression. He saw himself suspended vertically in the air, heels up and head down, the head cut off, and remaining nine or ten inches below the body—all without any visible means of support, resting as if held quiet and motionless by a magnet. Nobody could inform him how long his body and head were to remain in that predicament.

Alcholic drinks often bring frightful images in sleep, and their influence sometimes extends to the waking state, as in *delirium tremens*, calling up, as if by natural affinity, ferocious beasts, serpents and demons. A stomach overcharged with food, especially when mixed with alcoholics, makes its appropriate exhibition in the hidden monstrosities of nightmare.

Cleanliness is entitled to rank as a virtue in those communities where eating and drinking are among the leading elements of social refinement. Indeed, it is most natural to infer that an organ of so great extent as the human skin, and occupied in casting out from the blood the worn-out tissues of the several organs, ought to be kept in a state of

activity and vigor. In aid of this excretory function, bathing of some form is generally regarded as valuable; and still it cannot be denied that great numbers of individuals, in our farming districts, pass many years without, in a single instance, plunging or washing their entire bodies in water, and notwithstanding attain to an advanced age.

Dr. Livingstone, in a communication read before the British Scientific Association, mentions that, in African explorations he found a tribe who live in villages; are industrious, cultivate and manufacture cotton, work in iron, and produce fruits, grains, and esculent roots. They have a healthy climate, judging from the number of white-headed men, apparently very old. They are averse to ablutions, or to bathing in any form. "An old man said he remembered washing himself once, when a boy—never repeated it—and from his appearance, the truth of his statement could hardly be doubted. The castor oil with which they lubricate themselves, and the dirt, serve as additional clothing.

BATHS OF DIFFERENT KINDS.

The sponge-bath is one of the least troublesome varieties, occupying less time than any other. The apparatus is simple, viz. a basin of water, a sponge, a towel, and a mat, or bit of carpet, to stand upon. With the sponge, the body and limbs are moistened with water, and then rubbed dry with the towel. The water may be tepid or cold, according to the preference of the bather. In cold weather, when it is an object to excite a free re-action upon the skin, a hair mitten or a flesh-brush may be used after the towel.

The plunge-bath and the shower-bath may be warm or cold. Bathing should not be resorted to while the stomach is occupied in the process of digestion. Eleven o'clock in the forenoon is a good hour for the tonic effect of the warm bath, or of the cool or cold bath, in hot weather, if the person has eaten nothing since six or seven o'clock.

For the shower-bath, the head should be protected by an oiled silk cap, unless the hair be so short as to be easily wiped dry. In the natural drying of much hair upon the head, too much heat is abstracted from the brain.

Almost every one knows that bathing is not healthful unless speedily followed by a sense of warmth upon the surface; or a feeling of exhilaration, rather than languor or depression.

The public baths of Imperial Rome were among her most magnifi-

cent specimens of architecture. Relics are still visible of those of Titus, Diocletian, and Caracalla. Those of Caracalla were furnished with sixteen hundred seats of marble, upon which three thousand persons could be seated at the same time. "Those of Diocletian surpassed all the others in size and sumptuousness of decoration." The public baths, in all the cities of Rome, frequented by all classes, ultimately became schools of idleness, effeminacy, and licentiousness, and had no small share in unnerving the power which had conquered the world.

Poppœa, the wife of Nero, had at her control five hundred she-asses, in whose milk she was wont to bathe, for the benefit, as she supposed, of her complexion.

REPAIRING PHYSICAL WASTE.

Physical exercise, systematically and judiciously taken, is the greatest harmonizer of the bodily functions. Muscular action induces destruction of tissue; should it go on without intermission of rest, and resupply of nutrient material to make good the loss, exhaustion would be the consequence. The loss of tissue creates a demand for nutrient elements, which is made known by the sensation called "appetite." Under this action and reaction, loss and supply, the integrity of the muscular and nervous tissue is maintained. The bones, too, brought into action by the muscles, receiving their quota of stimulation during exercise, grow, and develop into proper proportions.

When exercise is partial, or local, the parts thus brought into activity grow out of proportion to the surrounding parts; thus the blacksmith exhibits a powerful and sinewy arm; the dancer a powerful and well developed leg. Exercise, therefore, when general, serves to develop in adequate proportions the various parts of the body, and, when partial, to strengthen those requiring better development.

Exercise quickens the circulation of the blood; the lungs, responding to the rapid flow, require a greater quantity of air for oxygenation; hence respiration is quickened to obtain the supply. The blood thus becomes purified in the lungs, and returns more rapidly to the tissues with new material for nutrition. The carbonic acid is thus quickly exchanged for the vitalizing principle, oxygen, that stimulates and gives vigor to the body. The pulse responds to this general tone, and consequently beats firmer and with a more even rhythm.

The union of oxygen with the carbon of the blood evolves heat.

When the circulation is rapid, the carbonized blood reaches the lungs quicker, requiring a greater amount of air for oxidation; hence respiration is increased, and a greater evolution of heat is the result. Exercise, then, performs the triple function of assisting in the elimination of effete matter, of conveying more nourishment to the exhausted tissues, and of generating heat.

Long-continued exercise, uninterrupted by periodical and adequate rest, would cause exhaustion, as is evinced by the sensation of fatigue. This sensation is the warning that the time has come when a supply of nutritive materials should go to replace the waste of tissue already incurred. To secure a perfect distribution of the nutrient elements, rest is necessary; consequently exercise immediately after taking food is hurtful, as activity destroys so much of the nervous force needed for a proper performance of digestion. Those who do not conform to these demands become dyspeptics, from non-assimilation of food.

EFFECTS OF EXCESSIVE FATIGUE.

Excessive fatigue indicates a great loss of tissue, and is dangerous, because the system, under its general prostration, would not manifest its wants; and, while it may require food, it may not induce the sensation of hunger suggestive of such necessity, and therefore go unsupplied at a critical moment. And, again, if much food is taken when the stomach is weak from continued fatigue and want of nourishment, it may remain unacted on, and unassimilated, and become a source of irritation instead of force.

Persons leading a sedentary life, or a life of little activity, as shopkeepers, who would eat out of proportion to the wear and tear of their bodies, accumulate fat, become obese and lethargic. Hard-working men, on the other hand (and particularly students, who use up an immense quantity of nervous matter), unless properly and adequately supplied by rest and nourishment, would become very lean, and be the victims of nueralgic and pulmonary complaints.

Exercise, to be beneficial, should be proportionate to the strength, and have relation to the habits and occupation of the individual. Purely physical labor induces stupidity, and lethargy of the intellectual faculties. Purely mental labor reduces the volume of the body, and causes a debility that renders one prone to receive impressions from the slightest irritating casualty.

Society, intent upon refining girls by close application to study, neglects that fundamental principle of health consisting of the proper equilibrium between mind and body.

What is proper exercise for girls? Such a question, on a subject apparently so simple, need occasion no surprise; because custom, habit and fashion have so misdirected young women in this regard that they scarcely would understand now what healthy exercise means. In society, as constituted, girls have but limited opportunities for it.

A daily walk should be enjoined upon all girls, from infancy upwards, without paying too much regard to slight inclemency of weather. If civilization has done anything, it has certainly invented appliances for the protection from cold, from rain, from wind, and from the sun. The walk should be a pleasurable one if possible, and of sufficient length to induce moderate fatigue.

BEST AND MOST NATURAL EXERCISE.

Walking is the first and most natural mode of exercise. The act of walking brings into play all the muscles of the body, and even the internal viscera partake of the general movement from the shock incurred every time the foot touches the ground. The circulation and the respiration are accelerated in proportion to the exertion undergone. The senses are not passive, for every object attracts the eye and causes a thought.

The changes of situation—as the being in the shade, under the sun, facing the breeze, quickening the step in the cold, slackening it in the heat, exchanging salutations with friends, or analyzing objects of curiosity—give an exercise of the organs of intellect as well as of the body which secures moral and physical equilibrium. It is therefore good for the sound in health, for the convalescent, and for the valitudinarian.

It is said that a systematic walker never dies of consumption. However true this may be, certain it is that those who form and carry out the resolution to take a daily walk generally enjoy good health.

Riding on horseback is one of the most enjoyable and salutary exercises known. This mode of motion is peculiar and ever-changing, and not dependent on the will. To maintain equilibrium, the rider must conform to the gait and the motion of the horse, which depend on the condition of the ground and on its own speed. Under this exercise the circulation and respiration are greatly increased and digestion assisted;

the mind is pleasantly engaged, emotions excited, and emulation inspired. Young people like to ride well—some desire to exhibit prowess and skill. In many diseases riding is found to be more efficacious than the most renowned therapeutic agents.

Riding, in increasing the tone of the muscular fibers, in promoting digestion and assimilation, corrects morbid sensibilities, and is therefore of great benefit in hysteria, hypochondria, chronic nueralgia, palpitation from dyspepsia, etc.

Dancing is probably the most welcome, and certainly a most useful exercise for girls, though the difficulty is in getting it under proper conditions. It is a system of motions, composed, as an author has said, of running, walking, and jumping. It has been practiced from ancient times, although of late it has undergone serious modification. The dance of the ancients was an inspiration, that had but little form or rhythm. Civilization, more exacting in propriety, as society understands it, has checked the impulsive and ingenuous motions of the "inspired" dancer, to reduce it to an even, regular motion, that is fatiguing and tedious from its continued sameness.

INJURIES CAUSED BY WALTZING.

Waltzing has been introduced, which, in its rhythmical turnings, can only weary the limbs, send blood to the head, cause dizziness and sickness of the stomach; it deprives the lungs of air, causing oppression from want of breath. Quadrilles, now almost entirely proscribed from the *salon* of fashion, are really a most excellent practice of gymnastics, particularly for girls of lymphatic temperament.

Dancing requires plenty of fresh and pure air to satisfy the greater circulation of blood in the lungs. The inspiring of a great quantity of air, surcharged with carbonic acid emitted from either burning gas or candles, and from the lungs of a multitude of persons present in a close room, is exceedingly dangerous. The motions occasioned by the various dances require that the muscles, and particularly those of the thorax, be free from the stricture of tight dressing.

Dancing contributes to physical education and development. It is a corrective of that sedentary life which keeps the lower extremities inactive; it is a pleasurable exercise, favoring sociability, and stimulating the desire for suppleness and grace; but care should be taken that the enjoyment of this mode of exercise be had only where the air is pure, and not

over-heated; when the dancers may be properly dressed, without compression, or exposure to sudden changes of temperature; and in company and at hours which are wholesome both to the *morale* and the *physique*.

On this score, Michael Levi says: "The moral and physical influence of dancing is a therapeutical resource that promotes menstruation when late, or corrects many of its irregularities. On the other hand, when too often repeated, or carried to excess, it may excite the organs of circulation, so susceptible in a young girl, and cause reactions which are distinguished by debility, pallor, and languor."

ADVANTAGES OF ROWING.

Rowing, for a specific purpose, namely, the development of a narrow chest, is one that cannot be surpassed. Under the alternate and continued extension and contraction of the muscles of the arms and of the chest, the ribs are kept in active motion, favoring, through this elasticity, expansion of the lungs. The circulation and respiration are greatly accelerated, thus adding to the exercise of those organs. The pleasurable excitement is conducive to a happy state of the mind. The air on the surface of the water is pure and invigorating. The motion of the body is graceful, and under these vitalizing agencies, girls of delicate respiratory or digestive organs will improve in health and strength, and acquire forms that are attractive in woman.

Billiards, so little practiced by woman, is one that stands pre-eminent among all games for healthful exercise. The constant change of attitude, the moderate force required, and the pleasure it inspires, fit it as the woman's game *par excellence*. Croquet, tennis, tossing ball, battledore, are games, which, being played in the open air, and moderate in their requirement of force, are also conducive to the health of girls.

Driving is a passive exercise which is healthful on account of the change of air experienced in the distance passed over. Driving to the country is far preferable to driving in the confined air of a city. The motion of the carriage communicates some motion to the body, which, although limited, exercises the muscles and the articular surfaces. It is a pleasurable mode of exercise, and a great relief from continued and confining occupation.

Sea going is generally healthful. The sea air, the novelty of the situation, and, often, sea-sickness, prove salutary. Many invalids have

found health at sea. The air is invigorating; it contains ozone, and the emanations of sea-salts. Sea-sickness deters persons from going to sea; but, really, it is seldom that it affects one in a distressing manner. The great majority of sea-going people feel the inconvenience for two or three days; after this they begin to feel better, and finally become perfectly well, enjoying an excellent appetite.

The rest of the journey is passed without illness, and the general health is greatly improved. When nausea is present, the smells of the ship, which come from the stagnant water in the bilge, or from the oil used on the machinery, greatly aggravate the case and add to the discomfort. It is therefore well that persons apprehensive of sea-sickness should engage berths well ventilated and distant from the engines.

Many are the hygienic expedients recommended to avert sea-sickness; but their comparative failure is only further proof of the general fact that things beneficial or curative to one are not so to another.

DIRECTIONS FOR DOCTORING SEA-SICKNESS.

Some adopt the system of lying down as soon as they go on board, and remain quietly in their berths for several days, until they feel no longer that terrible sickness. Others will remain constantly on deck in the open air. Both these methods are good, but the choice must be made from the experience of every individual; for that which will suit one may not suit another.

Passengers should go on board in good condition, at least so far as the biliary organs are concerned. The intestines should have been previously unloaded, even by a discreet purging. On board, for the three or four first days, food should be taken often, but in small quantities. Champagne, brandy, lemon juice, or pounded ice often relieves inclination to nausea, and even an intense attack of it.

Persons easily affected by the ship's motion should secure a position as near the centre of it as possible, as there motion is least. Keeping the perpendicular by swinging the body in the opposite direction to the motion of the boat lessens its bad effect. Sea traveling often cures chronic diarrhœa of long standing, invigorates the biliary apparatus, and relieves biliousness. Hepatic, renal colics and dysentery are also often cured. It is said that choleraic patients do well at sea.

Singing is also a mode of exercise about which little has been said regarding its effect upon the health of girls. A great hygienist, however,

speaks as follows: "At the age when the system has not attained sufficient development, the exercise of singing is not without accident. In the natural state, respiration is divided in two equal actions, viz.: that of inspiration and that of expiration. In singing, the alternation is not regular or uniform; the inspiration by which the voice is sustained is held for a long time; the blood, unable to enter the contracted lungs, dilates the cavities of the heart, the larger veins and the capillaries; it is then that the veins of the neck swell and the face becomes red. It is thought that this suspension of a regular breathing tends to induce diseases of the heart and of the lungs, at least in delicate girls. Many girls who are preparing for professional singing, have to abandon it on account of pulmonary hemorrhages."

It is therefore necessary to use proper judgment in this regard, and not force the practice of this art upon girls whose organization cannot bear the effort without suffering. Singing is an attractive accomplishment; but the health and life of a girl are of greater importance, and she should not be led into the practice unless her physical development warrants it.

Girls whose efforts to reach a high note are such as to make the bystanders tremble for fear of accident, should not sing. "A beautiful voice adds new charms to beauty, but the study of an art of pleasure should not be one of pain and danger."

It is principally for girls who attend school that exercise of divers kinds is imperative. Mental work and bodily inertia lead to nervous exhaustion and deformity. Gymnastics, adapted to their physical condition, should be practiced during the hours of rest. The importance of this fact is so generally known now, that all well-conducted schools are supplied with proper gymnastic apparatus.

Exercise secures good digestion, maintains a good circulation, a proper temperature, and gives vigor to the body; it is therefore one of the greatest protectors a young woman can have.

FEMALE CLOTHING.

CHAPTER XXVI.

NATURE, so bountiful in every provision for the protection of life has scarcely ever demonstrated greater wisdom than in the selection of coverings for animals that inhabit regions of the earth of different temperatures. Man, however, who is not limited to either space or latitude, she has left naked, but endowed him with an intellect capable of selecting such covering as season or locality may require. By this means he is enabled to migrate from one part of the world to another, exposing himself to violent atmospheric changes without danger. Food and respiration, although great contributors to the maintenance of bodily heat, would not suffice in the glacial regions, where the loss of caloric is above what nourishment and oxygen can provide.

Had man been provided by nature with a permanent covering, it is easy to conceive that he could not pass from an arctic to an antartic region without exposing himself to such sudden shocks to his constitution as would imperil his life. It is true that the natural covering of animals undergoes necessary modifications in conformity with the changes of seasons, and often of climate; but never so far as to enable the white bear of the glaciers to live comfortably at the tropics.

Some animals, however, migratory by nature, select the climate best adapted to their nature; but those are they which are endowed with great swiftness of locomotion, as certain birds, with the power to fly a thousand miles without rest in a comparatively short time; moreover, this is possible only to those whose food is easily obtained from the air, from the earth, or from the water.

The habits of man, and all his necessities for existence, are such as to localize him. He cultivates the earth that it may yield him food, and in such quantity as will provide for him against the uncertain future;

he stays by his stores, and therefore does not feel compelled to leave the place of his birth in search of supplies.

Every surface radiates heat, and man, to prevent such radiation as would lower the temperature of his body below the standard consistent with the preservation of its existence, envelops it in clothing. The amount of radiation of caloric from the body depends also upon the condition and the temperature of the air immediately surrounding it; and as these conditions are many, in the different parts of the globe, and changeable even in the same locality, according to seasons, it follows that the materials for clothing must vary in their power of retaining or radiating heat. Man has, therefore, taken from the animal kingdom, skins, furs, feathers, silk, wool, etc.; and from the vegetable, cotton, linen, jute, etc.; their adaptability for dress depending upon their power of conducting or retaining heat.

All articles of dress are more or less bad conductors of heat, and are interposed between the external air and the surface of the body as mediums to adjust, at all times and under all circumstances, the proper proportion of radiation and absorption of heat compatible with the integrity of the body.

HEAT RADIATES FROM THE BODY.

The very limited stratum of air which, however, is left to fill the place between the clothing and the skin, and also within the interstices of the material itself, is warmed by the radiation from the body and remains so, protected by the outer clothing, maintaining thus next to the skin a medium the temperature of which is neither too high nor too low; for the same power that the material has to prevent the quick transmission of heat from the body to the outer air it has to prevent the transmission of heat from the atmosphere to the body.

The radiating or absorbing power of the material depends upon its color, its quality, texture and shape. Black absorbs, white reflects, caloric rays. Ice exposed to the rays of the sun will melt quicker under a black than under a white cloth.

Heat-conducting power is very feeble in wool, silk, fur, feathers, and all materials, in fact, derived from the animal kingdom; hence they are used in the winter season, and in northern latitudes. The intelligent and economical housekeeper surrounds her ice with flannel to prevent its melting rapidly, just as she envelops her babe in blankets to keep it warm, wool being a bad conductor of heat. Linen, flax, and

cotton, and all clothing material from the vegetable kingdom, are better conductors of heat, and are therefore useful in the summer season, and in regions where the temperature is generally elevated.

The various materials for dress have also electrical relations; silk, wool, fur, and feathers possessing in a high degree the power, not only of developing but of retaining electricity; while flax, linen, and cotton are good conductors, and diffuse electricity. It is on account of the above-stated facts that rheumatism, neuralgia, and all nervous diseases that are benefitted by the electric current, are ameliorated by wearing silk, wool, or fur, while they are aggravated by linen or cotton.

The shape of clothing has also to do with the maintenance or loss of heat of the body. A cover drawn tightly around the limbs, not permitting a stratum of air to be interposed between the cloth and the skin, would necessarily be cooler than a looser garment that would allow some air in the space between, for air is a bad conductor, and the clothing serves as a shield from the outer air that would otherwise absorb the heat from the enclosed stratum.

HOW PLANTS ARE PROTECTED.

The intelligent gardener, without much knowledge of science, protects his tender plants from the frost on the same principle, namely, by spreading a cover over them, which stops radiation, the natural cooling process.

The Roman flowing robe for women and the toga for men were probably the most physiological vestments for that climate, leaving the limbs free to act, and yet preventing radiation sufficiently to keep the body comfortably warm. In latitudes where the thermometer falls below zero, such open dressing would allow too much exchange of air, and the stratum above mentioned could not retain the degree of heat necessary to health and comfort. In spite of fashion, however, intelligent communities have, upon experience, settled on a width of garment which is best adapted to the atmospheric conditions as well as to the different occupations in life.

The only article of woman's clothing which attracts the attention of the physiologist, on account of the objectionable tightness, is the corset. This article of dress is of comparatively modern invention, having been introduced by Catharine of Medici. Bouvier, who has given attention to the modes of dressing the chests of women at various periods, says:

"Anciently the women wore chest-bands. In the first century of the French monarchy, and during the greater part of the Middle Ages, they vacillated between the Roman band and the new invention, "the body to the dress," that is, the robe cut in two, the upper, called the "body," fitting closely around the chest, while the lower part is left as a flowing skirt, a dress that prevails to this day.

"Towards the end of the Middle Ages the latter had prevailed. After the sixteenth century, corsets, stiffened with whale-bones, were introduced, which, modified to some extent, have continued to the present day." So much has been said about this article that it would seem but a work of supererogation to say more; yet it is a subject of such great importance that even with the danger of running into repetition, it will be here again noticed.

A SUPERFLUOUS ARTICLE OF DRESS.

While it may be said that it is a support to the breasts, that it affords comfort to the wearer, it may be answered that a simple band, appropriately applied, would do as much; that all women do not need such a support, and that it is in this very instance where it is most injurious.

The corset, as adopted in modern times, is a stiff, unwieldy instrument, covering tightly a large and most important part of the body. It is kept in place by its own pressure, which is exerted over the muscles of the chest, over the cavity of the stomach and of the abdomen, thus reducing their natural capacity. When pressing upon the bosom, it prevents its development, and sinks the nipple into its substance, rendering the process of nursing almost impossible; pressing upon the chest it prevents a full expansion of the lungs by its fixed limits, and by paralyzing the muscles; pressing on the abdomen, it retards the circulation of the blood so important to the organs contained therein, it reduces the cavity and forces the intestines downwards, the latter pressing the womb, which eventually becomes the victim of displacements; pressing upon the stomach, it reduces its capacity and its power of muscular motion, necessary to the process of digestion.

That article of dress therefore may, when used only for the purpose of vanity, be the source of dyspepsia, consumption, prolapsus and ulceration of the womb, leucorrhœa, constipation, and hemorrhoids, so common among the most fashionable class of women.

As to the relations of color of dress, it is, for our purposes, chiefly a matter of heat. A cook wishing to heat water rapidly places it in a black

caldron over the fire, or wishing to keep it warm for a long time after its removal from the fire, places it in a shining white pot.

Experience has taught that; but the explanation is that black is a conductor of heat and that therefore when the heat is external it will pass more readily through a black caldron, and would as easily pass outwardly should the same black caldron be used to retain the fluid after the fire is withdrawn. White being a conductor of much less power would not heat the water so rapidly when exposed to the fire, but would retain the heat longer when the surrounding air is cooler than the water.

Dr. Stark, who has made experiments upon the heating power of color, has come to the conclusion that black stands first, blue second, red third, green fourth, yellow fifth, and white last.

Count Rumford and Sir Edward Home recommended that black be preferred in hot climates, in the shade (and, we suppose, when the external temperature, however warm, is below that of the body, namely, ninety-eight Fahrenheit) because the heat would more quickly radiate from the body. That is even said to be the reason why the negro is able to live in a hot atmosphere; for, although under the sun he would absorb more heat than the white man, in the shade he would also radiate more, and thus bring about the wonted compensation.

PREFERENCE FOR BLACK IN DRESS.

The same authorities declare that colors differ in power of absorbing moisture, and that, in that connection, they follow the rule of their heat-conducting power, and therefore suggest that in miasmatic localities, and particularly after the sun has passed below the horizon, persons should wear clothing of light color in preference, and they even blame the physician, a person more exposed to contagion and infection than any other, for his preference for black in his articles of dress.

The Clothing of Special Parts.—*Head.*—The head should be kept cool, particularly in children, as heat predisposes that organ to congestion. The adult need wear but what will protect from the rays of the sun and from the rain. Non-conductors, as felt, silk, wool or furs, are generally injurious. The loss of hair so common among men is from wearing around the head materials that retain both heat and moisture. In the countries where women wear but a veil upon the head, as in Italy, Corsica, and the East, the hair grows luxuriantly and does not fall. False hair and other appliances, used to give a fictitious volume, injure the

growth of the natural hair on account of the weight they impose and the heat and moisture they retain.

The Neck.—The blood circulation of the neck is not only great but superficial, the carotid arteries and the jugular veins being near the surface. Pressure around the neck, therefore, would be highly injurious, as it would prevent the flux and reflux of blood to and from the brain. The use of furs around the neck, except in extremely cold climates, is mischievous, by inducing perspiration to which the air has easy access, cooling it rapidly, and thereby producing catarrhal diseases and sore throat.

The Trunk.—This part of the body, containing so many noble organs, requires the most intelligent treatment in the way of dress. In climates where the changes of temperature are sudden, flannel is the material that should surround it, for it retains heat and prevents a too quick evaporation. In climates of a more even and moderate temperature, cotton or linen may be worn with comfort, provided the person wearing the same be not exposed to drafts of air even on a hot day.

APPAREL MADE OF FLANNEL.

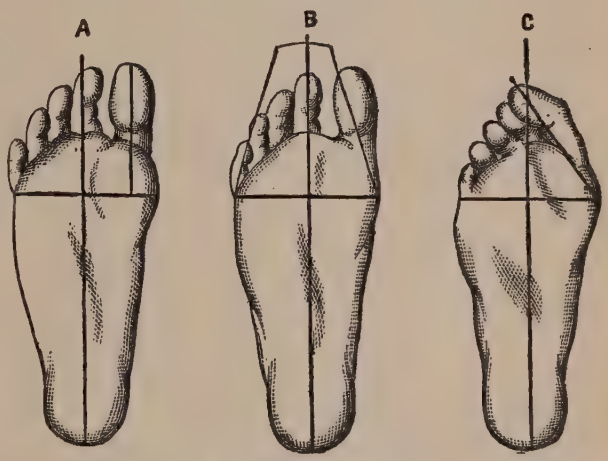
The condition of persons should be taken into consideration at all times; for delicate persons of lymphatic temperament, evolving but little heat, or persons subject to catarrhs, bronchitis, pneumonia, rheumatism, and neuralgia, should wear flannel at all times, although its thickness may be changed in accordance with the temperature of the atmosphere. The partial exposure of the chest, so customary among women of all ages, is extremely dangerous, from the radiation of the natural heat of that part and the quick evaporation of its moisture—a cooling process which predisposes to congestion.

Extremities.—An old adage says, "Keep your head cool and your feet warm." Thick soles are great protectors to the feet; leather, being but a feeble conductor, keeps them cool when placed upon a warm soil, and warm when upon a cool one. The paper soles formerly so much used by fashionable women are injurious. Their thinness and elasticity cause the feet to yield to every unevenness of the grouud, rendering walking so tiresome and painful as not to be prolonged without discomfort. Fortunately, Fashion has grown sensible, and now prescribes substantial soles for women to walk on.

Tight shoes punish the wearer with both corns and bunions, and

therefore need but little discussion on our part; fashion and vanity have done much to injure the feet of our women. A good shoe is a shoe that fits, it is neither too large nor too small; a large shoe injures by friction. High heels change the centre of gravity of the body, throw the knees and pelvis forward, and the upper trunk backward to maintain equilibrium, thus predisposing to dangerous curvatures of the spine.

Now, in the shaping of a boot or shoe, it will, I presume, be allowed that the boot or shoe ought to be made to fit the foot, and not the foot a boot which has an arbitrary outline decided by the fashion of the time. It happens that the ordinary shoe has little or no relation to the natural outline of the sole. The fashionable boot terminates in front in a more or less pronounced point, and the part occupied by the toes is usually its very narrowest part. The ordinary shoe is made on the principle of bilateral symmetry, and apparently on the assumption that each foot is divided into two perfectly-symmetrical parts. As one writer on the subject well observes, the fashionable shoe is made of a certain shape, "as if the human foot had a great toe in the middle and a little toe at each side, like the foot of a goose."



A. Natural Foot. B. Foot with outline of boot. C. Foot distorted by boot.

Why this particular shape should be admired it is difficult to say. There is nothing unsightly in the perfect human foot, and it is hard to understand why a boot that more or less completely reproduces the normal outline of the member should be considered as repulsive. The active spreading toes of a child's foot are certainly more to be admired than are the crushed and distorted toes of the shoe wearer; and the perfectly-shaped feet made familiar by good statuary have surely an outline that is in itself more agreeable than is the rigid and wedge-like outline of the fashionable shoe.

If well developed feet are placed side by side and heel to heel, the two great toes will be found to be parallel to one another, and to touch one another almost to their very ends. If the same feet, clad in the shoes

of the period, are placed in the same position, it will be found that, while the heels are in contact, the inner borders of the two soles diverge, and that the tops of the two great toes will be separated by a considerable interval.

Now, for the proper performance of the functions of the foot, it is essential that all its movements should be unrestricted, that the toes should have free play, and that the great toe—which is so indispensable to the act of progression—should have a free range of motion, and maintain its parallelism to the long axis of the foot. What effects, however, do ordinary shoes have upon the feet? The toes become crushed together, and are often made to overlap one another; the great toe is no longer in a line with the axis of the foot, but is pushed outwards towards the middle line of the sole. The joints between the many bones are rendered rigid; the muscles, being unable to act, waste; the ligaments shrink, and the foot becomes a deformed, rigid and inert block.

PRECEPTS CONCERNING DRESSING.

That consummate hygienist, Hufeland, laid down certain precepts about dressing that we gladly quote here:

"Dress should not prevent the evaporation of the body, and not be so heavy as to fatigue. Furs should be discarded, because they retain too much heat, excite perspiration, and prevent evaporation. In this case the deleterious matter given out by the skin is retained on the surface of the body, becomes absorbed and injurious to the organism. For this reason too warm clothing is injurious to feeble constitutions, and to persons subject to rheumatism. Young people in good health should adopt light vestments in preference to very heavy and warm ones. Exercise is the best producer of heat for young people and assists evaporation. Fat, pork, cheese, candies, are creators of heat, causing no evaporation, and therefore should be avoided, particularly during warm seasons.

"Persons who have passed the meridian of life, when animal heat and evaporation are on the decrease, should wear garments of wool; and those of a lymphatic temperament, inclined to fat and indolence, those leading a sedentary life, and those subject to catarrh, mucous discharges, diarrhœa, dysentery and gout, should be particular in observing this rule.

"Wool is also beneficial to persons subject to congestions, vertigo, neuralgia, ear-ache, rush of blood, cough, pain and oppression of the lungs. Wool excites the skin, relieves the blood by evaporation, and is

therefore a preventive of consumption, hemorrhoids, and all bloody flux. It is useful to those whose nervous power is feeble, to hypochondriacs and hysterical persons. It is a protector against cold and heat, dampness and wind.

It is preferable in latitudes where atmospheric changes are sudden and frequent. It is not beneficial to persons who perspire easily, or who are possessed of much electricity, nor to all those who have great vitality, or who are predisposed to cutaneous eruptions. All clothing made of wool should be changed often, because it retains the emanations from the skin which would become a source of irritation."

Ed. A. Parkes, military hygienist, also says: "Wool being a bad conductor of heat and a great absorber of perspiration, is superior to cotton or linen. During perspiration the evaporation from the surface of the body is necessary to reduce the heat which is generated by exercise. When the exercise is finished the evaporation still goes on, and to such an extent as to chill the former. When dry woolen clothing is put on after exertion, the vapor from the surface of the body is condensed in the wool, and gives out again the large amount of heat which had become latent when the water was vaporized.

PREJUDICE AGAINST WEARING WOOL.

"Therefore, a woolen covering from this cause alone, at once feels warm when used during sweating. In the case of cotton and linen the perspiration passes through them and evaporates from the external surface without condensation, the radiation of heat then continues. These facts explain why dry woolen clothes are so useful after exertion."

During convalescence, from debility and lack of red globules in the blood, persons are very susceptible to cold; hence, flannel should be worn by them, particularly when the debility is a consequence of rheumatism, intestinal inflammation and pulmonary diseases.

There exists a prejudice against wearing wool in the summer season; but that is due to the ignorance of the fact that the danger to health is from a too rapid evaporation of the fluid emanating from the skin. The laborer in hot countries always wears his flannel, knowing that otherwise he would be easily chilled. To demonstrate the cooling process of evaporation one has only to come out of a bath and remain undried for a few minutes; unless the air surrounding the body is of a very high temperature and moist, the person will become chilled in a very few seconds.

Governments have now discarded linen in the clothing of soldiers; and in Italy, in July and August, the soldier wears his woolen uniform, and at night, when exposed to malaria, while on duty, a white woolen cloak.

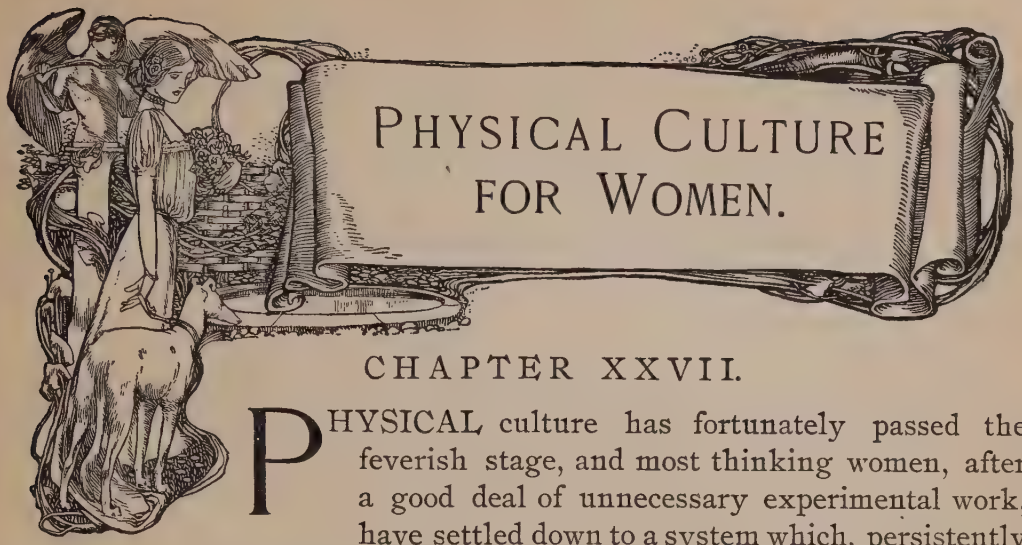
The cowl does not make the friar. This truism, we are almost inclined to say, is not true; if not in its literal sense, at least in its philosophical acception. Dress is more often an outer expression of self than that saying would imply. There is disguise in everything; but we think the disguise is the exception, not the rule. If persons acting in a disorderly manner should be suddenly arrested by a person in the garb of a policeman, and receive from the latter the order to follow him to the nearest police-station, nine out of ten would follow without questioning his authority.

If, in time of war, persons going on a certain route to a common destination should suddenly be halted by a man in the recognized uniform of a soldier and ordered to return, nine out of ten would return without asking for his commission. A needy person, out at elbows, unwashed and uncombed, found on one's premises, is at once looked upon as an intruder, or suspected as a robber, and probably thrust out unceremoniously. But if the person is neatly and comely dressed, the inquiry might be made of him in a polite manner, "What do you wish, sir?"

The thief that wants to pick the pocket of a gentleman dresses himself in the conventional garb of a gentleman. It is true that in his case the dress does not make the gentleman; but his experience has taught him that in the majority of cases it does, and therefore he trusts that his exception will not be detected.

Clothes are emblematic. A neat, well-dressed person is generally a person of order; slovenly in his dress, he is most likely to be slovenly in his habits and in his thoughts.

A philosopher says: "All visible things are emblems; what thou seest is not there on its own account; strictly taken, is not there at all. Matter exists only spiritually and to represent some idea and body it forth. Hence clothes, despicable as we think them, are so unspeakably important. The soldier even in citizen's dress bespeaks the soldier, for his coat is trim to his body and his breeches must fit his well-turned legs. The farmer, even in soldier's dress, is the farmer still; for buttons trouble him, and his easy going is interfered with by the close-fitting uniform; he lets it bag, and looks the sloven farmer."



PHYSICAL CULTURE FOR WOMEN.

CHAPTER XXVII.

PHYSICAL culture has fortunately passed the feverish stage, and most thinking women, after a good deal of unnecessary experimental work, have settled down to a system which, persistently followed, will accomplish the desired ends. There has been a great deal of unnecessary time and effort expended in various schools of so-called training without good results. We have had all sorts of appliances and machines proposed as necessary for the development physically of every man, woman and child in the universe.

Innumerable systems requiring more or less elaborate apparatus have been placed where we could not get away from them, or at least from diagrams or pictures of them, and I assume that almost every woman reader of this page has passed through a phase in the physical culture movement during which she has felt that life without a punching bag, a lift, or a medicine ball would be a dreary waste. Machinery has a weird fascination, and I myself, who should know better, have succumbed to the snare of pulleys, mechanical rowing apparatus, and what not. I have pulled at weights, and punched at balls, waved clubs and brandished dumbbells. I know the charm of ropes and bars, bags and clubs.

But truth is eternal and cannot be, as the boys and girls of to-day say, "side-tracked," and the truth is that no specially designed contrivances are necessary for the physical development of any subject.

Thinking women who know something of anatomy and a little of physiology are satisfied that to attain and maintain health and beauty nothing can take the place of the daily exercise which brings all the muscles of the body into play, expands the lungs, and sends the blood tingling through the veins. These women know that by a certain amount of physical development, which is dependent, of course, upon exercise, they may regain or retain the supple grace of youth.

They know that by exercise alone they can prevent the development of huge abdomens and hips and will never join the army of distorted creatures, who, suffering from the results of over-eating and ignorance in the care of the body, are classified as the women with the "middle-aged figures." Also they know that while appliances are useful and to some persons lend a special interest to exercises, they are actually unnecessary for muscular development.

The women with the middle-aged figures are our misguided sisters who, as one says, "will insist upon sitting upon the ends of their spines." These are the women also who have forgotten or who have never learned how to stand or walk. I might truthfully add also that rarely does a woman with the middle-aged figure know how to breathe correctly.

I want you to consider the importance, the truly wonderful importance, of correct breathing, not only upon the appearance and health, but upon the actual happiness of every woman. I am a crank on this one point, but am not without eminent supporters. Every system of physical culture, whether it includes appliances, or is devoted to free hand exercises, to-day insists upon the correct breathing of the subject.

THE SCIENCE OF BREATHING.

Particular attention is now paid to the physical development of women, especially to the science of breathing. To breathe aright will remedy pulmonary complaints as effectually as sleeping in the open air. I am not alone in this opinion. I am glad to quote from so famous an authority as Mr. Checkley on this particular point.

"When we stop for a moment," says Mr. Checkley, "to consider the tremendous importance of the lungs, it must become apparent that any neglect of these great central boilers of the body is the worst kind of neglect. The office of the lungs is of the very highest importance. This importance is incidentally acknowledged by many writers and teachers. But the development of the lungs is left to take care of itself, it being assumed as a general thing that all exercises tend sufficiently to expand the lungs.

"To be sure, great stress is occasionally laid upon the expansion of the chest. But the assumption too frequently appears to be that this expansion is a matter of external muscular development. This theory is on a par with the general superficiality of the average system of training.

"The strength of special parts in a steam engine and even of bands

upon the boiler will not prevent weakness and possibly an explosion, if the material of the boiler itself is without strength. Hard layers of muscles on the chest do not improve the permanent strength of the lungs.

"It should be clear that the enlarging and strengthening of the lungs can be satisfactorily accomplished only by the exercise and special training of those organs themselves. In other words, beginning on the inside. This truth lies at the very bottom of natural physical training.

"To learn to breathe is to learn the A, B, C of physical health, and it is of special importance that this education of the lungs should precede the education of the outer muscular system. For the natural increase of lung strength and chest room is retarded by methods that begin on the outside first."

EXERCISES FOR ARMS AND SHOULDERS.

I want in this chapter particularly to speak of the defective way in which so many women carry their bodies, and to suggest a very humble system of exercises for developing and strengthening the arms and shoulders, and thus aiding the subject to carry her body properly. I suppose it should be perfectly natural for us to have a perfect carriage, but the fact is that the woman who holds herself correctly, who sits and stands as she should, is very rarely seen. There has been a great deal of well merited abuse of the corsets and of our French heels, and I have no doubt that one and the other are to a degree accountable for the defective carriage and sitting posture of many women.

But if we go into a school-room in any large city unexpectedly we shall find that nine out of every ten children are sitting improperly or carrying their bodies as they should not, and that these children have never worn corsets or heels to their shoes. It does not seem natural to us at this time of the world to stand or walk or sit correctly.

If a picture were to be taken, a snap-shot, for instance, of twenty-five women and children, walking on any one of the principal thoroughfares, it is safe to say that twenty of them, at the very least, would be out of drawing, or rather out of harmony. And that twenty out of the twenty-five would be dependent upon the bony structure of their bodies and not on their muscles for keeping the body upright. Properly speaking, the muscles of our bodies should hold us in position. It is the muscles that should hold the trunk upright and keep the proper relation between the spine and the pelvis.

Unfortunately most of us force the bony structure to perform this task. The exercises illustrated in this chapter are especially of value for strengthening and developing the arms, shoulders and chest. They form a system complete in itself for the straightening out and strengthening of the weak back and bent shouldered girl or woman.

It takes time and practice with many to get to a place in physical culture where one realizes that free-hand exercises, that is to say, exercises without any apparatus or appliances whatever, result in just as much benefit as those which require machinery or apparatus.

The exercises here described can be performed with any object held in the hands. A pair of dumbells or Indian clubs would do. But a chair, the simplest kind of a kitchen or dining-room chair, will give the subject precisely the same results. The great point in view is to get exercise for the muscles which require developing.

So long as you do not over-train, it really makes little difference how you get the exercise. The best way to take these exercises is lying flat on a couch or bench, but they may be taken standing, using the chair as one would a club. The chair should not be heavy. It is not weight, but something to grasp, which you require.

HOW TO TRAIN THE MUSCLES.

Illustration No. 1. Grasp the chair and raise it until it is directly over your breast. Then turn it to the right until it reaches the floor, at the right side of your head. Raise it again until directly over the chest, then turn to the left, until it reaches the floor on the left side. Inhale a deep breath and hold it during one or two of these movements.. Expel the breath gradually and slowly. When you inhale a deep breath the chest should expand fully.

Illustration No. 2. Grasp the chair and keep the elbows straight. Stretch the chair without bending the elbows, as far to the right as possible and then as far to the left . Repeat.

This is an excellent exercise for the shoulder muscles and for the muscles just back of the shoulders.

Illustration No. 3. Seize the chair and keep the arms rigid. Raise the chair up as high as possible and then as far back over the head and forward as you can. Continue until the muscles of the arms are slightly tired.

It may be well to say here that no physical culture exercise should

ever be continued after the subject begins to feel really exhausted. The effects of exercise after fatigue has really taken place are frequently disastrous and far reaching.

Illustration No. 4. Seize the chair and raise it high up over the chest and bring it down again. This exercise is for strengthening the back and developing the upper arms. Continue it until you are conscious of fatigue. Then stop at once.

Illustration No. 5. Seize the chair and raise it without bending the elbows and bring it directly over the chest. Now make a half circle with the chair, bring it as far down on the right side of the head, and then over as far down on the left side as possible. This exercise will develop the intercostal muscles.

THE FAMOUS SWEDISH MOVEMENTS.

The exercises which are very well known as the Ling Exercises of Swedish Movements are excellent as a beginning of physical culture for those persons who are content to practice without an apparatus. These exercises are especially good for women who are inclined to be stout. They are performed in the following order:

First—Describe a circular movement with each arm twenty times in succession. Extend the arms forward, outward and upward, thirty times in succession, taking eight or ten deep inspirations between each series.

Second—Execute a circular movement from the waist, swaying the upper part of the body slowly round, the hands resting upon the hips. Make this movement thirty times.

Third—Extend the leg as nearly at right angles with the body as possible. Repeat twelve times on each side, taking eight or ten deep inspirations between each series.

Fourth—Extend and bend the foot twenty times each side. Perform the gesture of reaping or sowing thirty times. Bend each knee rapidly twenty times. Take eight or ten inspirations.

Fifth—Raise the arms swiftly and rapidly as in the action of throwing a lance twelve times in succession. Throw out both arms simultaneously twenty or thirty times. Take eight or ten deep inspirations.

Sixth—Trot on one spot, the hands on the hips and lifting the feet briskly, a hundred or three hundred times. Take eight or ten deep inspirations.

Seventh—Jump with the hands on the hips, holding the head and body erect, fifty or one hundred times. Take eight or ten inspirations.

Dr. Shreber says that these movements, if executed with order, should occupy a good half hour, but my experience has proven that if they are performed without haste and with intervals necessary for the deep inspirations and repose, they require nearer an hour's time.

Physical culture exercise in order to be effective must be performed with all the vigor and heartiness which can be put into them. If they are not executed with a will and good nature they are useless. Every gesture must be ample and resolute, well defined and separated by a distinct pause from the preceding and following movements.

The exercises must not be pushed, as I have before said, to the limit of the performer's strength, and all distress, pain or exhaustion must be avoided. It is impossible to take physical culture exercises with any benefit and take them languidly—don't try it.

HOW TO BEGIN AND PROGRESS.

For weakly women or those suffering from temporary and periodic indisposition, the movements must be modified. Do not forget that in order to get real benefit, physical culture should be begun in moderation and only increased as the strength and development of the performer easily warrants.

Physical culture movements are practically useless unless the room chosen for the exercise is cool, and supplied with quantities of fresh air, and better results will be obtained from a room unencumbered with furniture, and if possible, uncarpeted.

The time chosen for these exercises should be before breakfast or during the forenoon, preceding by an hour at least the second meal of the day. The dress should be light, entirely without restricting bands. Tight, heavy skirts should never be worn, and the shoe should be high, comfortable and without heels.

A great many women find it extremely fatiguing to walk up and down stairs. One constantly hears women complain of back-ache and great exhaustion incident to walking up and down several flights of stairs. This is all wrong, for if a women knows how, walking up and down stairs is rather exhilarating than otherwise, and not a bit more fatiguing than walking on the level.

To mount stairs properly there should be no waddling from side to

side; none whatever. No trudging or pounding as though the object were to push holes in the steps. No leaning forward and no dragging, weary climbing. The body should remain erect, the steps should be taken with the toe and the movement to the next step made with a springing motion. A caress of the structure, if you will, instead of a kick. This produces a gradually graceful, poetic elevation, instead of a cumbersome hauling of the body upward.

To increase the pleasure of walking and to lessen the exertion we must as in every other physical act know how to breathe properly, because if the lungs are well inflated an added buoyancy is imparted to the body. Not one person in ten breathes correctly, and according to recent estimate not one woman in one hundred breathes normally. The respiration, varying with every change of mental state or physical condition, grief, depression, exhilaration, fatigue, all have their influence in lowering or increasing the amount of oxygen that goes into the system.

FLEXIBLE ACTION NECESSARY.

The best exercises for standing, sitting and walking are conceded to be those arranged and described by Genevieve Stebbins. They are admitted to be founded on sound common sense. Miss Stebbins calls the standing exercises energizing exercises for the purpose of directing will force according to the laws of equilibrium and gradual development.

"Flexible action," says this author, "in lines of changing curve, is what distinguishes the beautiful from the merely strong. Nature in development is first angular, then circular, and finally spiral. In the human form, when poised on both feet, the spiral line is seen. For the head has a convexed curve, the body a concave curve, and the legs a convexed curve. That is, looking at the main outline and not going into details.

"To preserve this spiral line of changing curves, when we shift the weight, we should incline the head to the side of the strong leg, the torso (trunk of the body) inclining away from that leg.

"When the arms are inactive, the following rules should be observed: Bend the head toward the strong leg. Bend the torso away from the strong leg.

"By the strong leg is meant the one bearing the weight of the body. Stand with weight principally on the balls of the feet. In all the stand-

ing exercises, carefully observe the rules of opposition curves. Incline the head to the side of the strong leg. The torso from it. As the arc in which the head swings is much smaller than that of the torso, or of the leg, the inclination of the head should be proportionately less. The muscles of the thorax and of the back should hold the abdomen up, while the abdominal muscles hold it in.

There should be no slouching at the hips. In walking, the subject should stand erect, feet together, abdomen in, chest up, and shoulders firm. Advance the thigh, let the leg from the knee down hang lifeless. Straighten the leg and plant the ball of the foot on the floor in advance, with the toes turned out. When the weight is on the advanced foot, bring the backward foot in advance, and thus proceed, observing the rule of opposition in the carriage of the entire body. Carry the head erect, with the chin drawn well in.

HOW TO SIT GRACEFULLY.

"To sit gracefully, do not drop into a chair as if your bones had suddenly given way. But separate the feet—not sideways. Place one foot near the chair, so that the leg touches, or nearly touches it, and the other foot in advance. Incline the body forward from the waist. Bend the knee of the leg nearest the chair at the same time, so as to keep your balance while you sink gracefully to a correct sitting position.

"Recollect that it is quite as incorrect to sit on the edge of the chair, as though you feared an explosion were imminent, as it is to loll, as though you never intended to make the effort necessary to leave the chair."

The interest that all persons should feel in the Physical Training of Women will be greatly increased by the following home exercise, in which a number of young girls can engage. One of the number should be selected to call out the different orders and lead the exercise. It is a sort of military drill that may be performed with brooms, and the physical benefits to be derived from it are very evident.

It should be practiced until it can be performed promptly and without any mistakes. Any even number of girls may take part in it.

One great advantage of these exercises is that they are fascinating to young persons, and they enter into them with as great relish as they would into any form of play, so that they never regard them as a wearisome task, or something from which they would gladly escape.

During the marching there should be music, and the notes of the

piano should be struck sharply. Any good march will answer for the music. The following exercises conform very nearly to the "Manual of Arms" used in the army. The illustrations will be found very serviceable in showing the different positions.

Standing in rank, the leader gives the command to "present arms," "carry arms," "trail arms," etc. Each command consists of two words: the first is to indicate what the girls are to do, and on the second word the movement is made, all acting in concert. The following exercises are suitable, and always prove beneficial.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

Carry—ARMS!—The broom is held in the right hand, handle upward, with the hand clasping the handle where it joins the brush. The left hand hangs at the side. (Fig. 1.)

Present—ARMS!—Place the broom with the right hand in front of the centre of the body, clasping the handle with the left hand above the right. Hold the broom perfectly perpendicular. (Fig. 2.)

Order—ARMS!—Let go the handle with the left hand, and carry the broom to the side with the right hand; then drop the broom to the floor. (Fig. 3.)

In place—REST!—Grasp the handle with both hands, the left above the right, and place both hands in front of the lower part of the breast. (Fig. 4.)

Trail—ARMS!—Grasp the handle with the right hand and incline it forward, the broom behind, resting on the floor. (Fig. 5.)

Attention—CHARGE!—Half face to the right, carrying the heel six inches to the rear and three inches to the right of the left, turning the toes of both feet slightly inward; at the same time drop the stick into the left hand, elbow against the body, point of stick at the height of the chin, right hand grasping the stick just above the brush and supporting it firmly against the right hip. (Fig. 6.)

Port—ARMS!—Raise and throw the broom diagonally across the body; grasp it smartly with both hands, the right, palm down at the base of the stick; the left, palm up, thumb clasping stick; handle sloping to

FIG. 5.

FIG. 6.

FIG. 7.

FIG. 8.

the left and crossing opposite the middle of left shoulder; right forearm horizontal; forearms and handle near the body. (Fig. 7.)

Secure—ARMS!—Advance the broom slightly with the right hand, turn the handle to the front with the left hand. At the same time change the position of the right hand, placing it further up the handle, drop the handle to the front, placing the broom where joined with the handle, under the right arm. (Fig. 8.)

Reverse—ARMS!—Lift the broom vertically with the right hand, clasp the stick with the left hand; then, with the right hand, grasp the handle near the brush. Reverse the broom, the handle dropping to the front, the broom passing between the breast and right forearm. Press the handle under the arm with the left hand until the right elbow can hold it in place against the body; pass left hand behind the back and clasp the stick. (Fig. 9.)

Inspection—ARMS!—This is executed from the "carry arms" position. Lift the broom quickly with the right hand, bringing it in front of the centre of the body; then grasp the handle with the left hand, placed near the chin, and hold it. (Fig. 10.)

MOVEMENTS OF ATTACK AND DEFENSE.

These can be executed only with open ranks, the pupils being placed seven or eight feet apart. To so place them, the teacher will give the order—

Right (or Left) open Ranks—MARCH!—The pupils face to the right

FIG. 9.

FIG. 10.

FIG. 11.

or left, according to the order given, except the one at the extreme end of the line. The others march, the last of the file halting at every four or five steps from the one in the rear, until all are the same distance apart. They then face front. To close the rank, turn to the right or left and march toward the pupil standing at the end until halted by the one ahead. Then face front.

Attention—GUARD!—At the command *guard*, half face to the right, carry back and place the right foot about twice its length to the rear and nearly the same distance to the right, the feet at little less than a right angle, the right toe pointing squarely to the right, both knees bent slightly, weight of the body held equally on both legs; at the same time throw the end of the stick to the front, at the height of the chin, grasping

it lightly with both hands, the right just above the brush, the left a few inches higher; the right hand in line with the left hip and both arms held free from the body and without constraint. (Fig. 11.)

Being at the Guard—ADVANCE!—Move the left foot quickly forward, twice its length; follow with the right foot the same distance.

RETIRE!—Move the right foot quickly to the rear, twice its length; follow with the left foot the same distance.

Front—PASS!—Advance the right foot quickly, fifteen inches in front

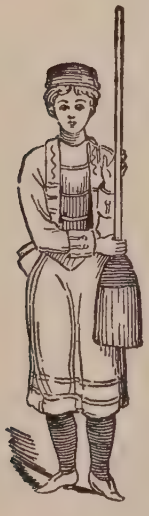


FIG. 12.

FIG. 13.

FIG. 14.

of the left, keeping right toe squarely to the right; advance the left foot to its relative position in front.

Rear—PASS!—Carry the left foot quickly fifteen inches to the rear of the right; place the right foot in its relative position in rear, keeping the right toe squarely to the right.

Right—VOLT!—Face to the right, turning on the ball of the left foot, at the same time carry the right foot quickly to its position in rear.

Left—VOLT!—Face to the left, turning on the ball of the left foot, at the same time carry the right foot quickly to its position in rear.

Right rear and left rear volts are similarly executed, facing about on the ball of the left foot.

Quarte—PARRY!—Hold the broom in front of the left shoulder with the right hand, handle upward, the fingers of the left hand on the handle, the left elbow touching the right wrist. (Fig. 12.)

Seconde—PARRY!—Move the point of the broom-handle quickly to the left, describing a semi-circle from left to right, the left elbow in front of the body, the flat of the broom under the right forearm, the right elbow two or three inches higher than the right shoulder. (Fig. 13.)

Prime.—PARRY.—Carry the broom to the left, covering the left shoulder, the handle downward, the left forearm behind the handle, the right arm in front and above the eyes. (Fig. 14.)

FIG. 15.

FIG. 16.

FIG. 17.

THRUSTS.

TO THRUST IN TIERCE.—Straighten the right leg, extend both arms, keeping point of handle at height of the breast, broom at right side of head. (Fig. 15.)

THRUST IN QUARTE.—The same as tierce, but with the broom on the left side of the head.

LUNGES.

The lunges are the same as the thrusts, except that the left foot is extended farther in front. Fig. 16.)

Broom to Front—ONE!—Raise handle nearly straight up and down, drop it into the hollow of the right shoulder.—TWO!—Strike quickly by pushing the broom forward, the handle always resting on the right shoulder. (Fig. 16.)

Right Short—THRUST!—ONE!—Hold the broom with the right hand to the rear, left hand by the right breast, the point of the handle opposite the centre of the body.—TWO!—Thrust forward. (Fig. 17.)

High Prime.—PARRY!—Raise the broom with both hands in front of and higher than the head. Hold the handle firmly with the right hand, the broom being to the right; turn the knuckles of the left hand to the front, and let other end of broom-handle rest on the thumb and forefinger. (Fig. 18.)

TO GUARD WHEN KNEELING.—Bring the toe of the left foot square

FIG. 18.

FIG. 19.

in front, plant the right foot to the rear, kneel on the right knee, bending the left, hold the broom at an angle of 45 degrees, pointing directly to the front, the right hand pressed firmly against the side, the left hand holding the point of handle upward. (Fig. 19.)

The girls can march and keep step with one another.

These exercises can be practiced singly by women while employed in their housework. The broom, which so many persons dislike, can be made to promote health and physical development, and thus render a higher service than merely keeping the floor clean.

HOME GYMNASTICS FOR WOMEN.

CHAPTER XXVIII.

VERY many women do their own housework. While they find in this sufficient exercise, it is not always the kind of exercise that is needed. Women who have no household employment are even more in need of physical exercise which will strengthen the muscles and tone up the vital organs, thus promoting health and vigor. Special care should be given to the lungs, and exercises for strengthening them should be constantly practiced.

Now, I do not claim that correct (by which I mean deep) breathing will cure consumption in every case. But deep breathing means filling the lungs with oxygen, and this increased activity must steadily invigorate and strengthen the starved, cramped organs. Consumptively inclined subjects are rarely erect—usually they stoop and have hollow stomachs and abdomens. Deep breathing persistently practiced will not only straighten out the contracted chest, but it will cause the subject to stand, sit and walk with the body erect, and will expand in a short time the chest, the lower ribs and lower part of the lungs and the waist and abdomen.

Just as soon as the subject learns to breathe with the lower as well as the upper part of the lungs and learns how to habitually hold the air in the chest as long as she comfortably can, she will notice a more vigorous circulation and will experience a sense of exhilaration and well being quite new. The hands and feet will soon be of normal temperature and the work of repair has begun.

Consumption is destruction; deep breathing is reconstruction. It is worth every one's trying, and I am more than repaid for my persistency

in calling my readers' attention to this free-to-all panacea for so many ills by the letters I receive from converts to the cult of the breath of life.

One of our eminent Professors of Physical Culture, who has made a study of the subject, gives some good lung exercises. They are so simple that any one can understand them, and while the system does not vary from the one I usually suggest, it seems to me the language used in describing these exercises is especially direct, and I therefore repeat them.

Lung development is the most important end to be obtained by physical culture. Weak lungs and imperfect digestion are inseparably associated, for to secure perfect nutrition food has to be thoroughly oxygenized, thus passing through a state of chemical combustion. The oxygen inhaled, uniting with the carbon of the food, produces this combustion. Hence the necessity for an ample supply of oxygen. Test your lungs by inhaling a full breath, inflate the lungs to their full capacity, and if it makes you dizzy you are in no danger.

WALKING IN THE OPEN AIR.

1. When in the open air walk erect, head up, chin drawn in, shoulders thrown back, thoroughly inflate the lungs, and retain the air for a second or two, then expel it gently. Practice this several times a day, and if your employment keeps you in, make time and go out.

2. The first thing in the morning and the last thing at night when you have nothing on but your underclothing, stand with your back against the wall and fill the lungs to their utmost capacity; then, retaining the breath, gently tap the chest all over with the open hands. Do this regularly every morning and night, gently at first, but gradually increasing the length of time for holding the breath and the force of the blows as the lungs grow stronger.

3. Stand upright, heels touching, toes turned out; place the hands on the hips, the fingers resting on the diaphragm, the thumbs in the soft part of the back. Now inflate the lungs and force the air down into the lower back part of the lungs, forcing out the thumbs. Do this half a dozen times at first, gradually increasing the number. Women seldom use this part of the lungs—tight dresses and corsets prevent them.

4. While in the same position fill the upper part of the lungs full, then force the air down into the lower part and back again by alternately contracting the upper and lower muscles of the chest. Do this repeatedly, for it is a good lung developer, and an excellent exercise for the liver.

5. Stand erect, arms hanging by the side, then slowly raise the arms until they are high above the head, at the same time gradually taking in a full breath until the lungs are completely filled; then gradually lower the arms, at the same time slowly expelling the breath. After doing this a few times (while the lungs are full) raise and lower the arms several times quickly.

6. Place the hands on the hips, the fingers resting on the diaphragm, the thumbs in the soft part of the back; then keeping the lower limbs rigid, bend forward from the waist line, expelling the breath at the same time quickly, then straighten up, inhaling slowly, then perform the same movement backwards. Repeat this five or six times, then, holding the breath with the lungs full, backwards and forwards a few times.

EASY TO LEARN HOW TO BREATHE.

It is, of course, true that one may learn to breathe correctly without what we call physical culture, though deep breathing is physical culture of itself. But what I mean to say is that one does not need to practice with dumb-bells or hoops to learn how to breathe, whereas one must learn to take long breaths by the practice of almost any gymnastic exercises.

Not long ago I received a letter from a very well-known Philadelphia woman, who for personal reasons did not wish the communication printed. She wrote that when she came across my explanation of the art of correct breathing she read the instructions aloud to her mother and brother. They all made great sport of the notion that, having reached the age of maturity and over, it was now suggested they had none of them ever learned how to breathe.

Just for fun they began the attempt to breathe according to directions. The girl pretended to be the instructor, and the mother and brother were the pupils, who did not know how to breathe. Before the first "lesson" was concluded the boy said: "Do you know I believe there is really something in it."

They kept the breathing exercises up, and afterward the young lady wrote me. "We are made over by learning how to breathe. We began it as a joke, but we are now three full-fledged cranks after your own plan. I have increased my bust measure five inches, and my general health has improved wonderfully My mother has breathed her chronic headaches away, and my brother, who had weak lungs, has developed as much as I

have, and never coughs at all, though he had coughed more or less for years." Another letter from a reader is from a man who was a pronounced consumptive. His doom was fixed by physicians. He practiced deep breathing, and he is now a well man. He says: "Was it to be expected, or has a miracle been performed in my case?"

The most beautiful actresses, both in this country and Europe, are devotees to scientific breathing. The great Bernhardt declares that the practice of deep breathing systematically so many years is the secret not only of her superb health, but of the maintenance in its purest integrity of her wonderfully beautiful voice.

The room chosen for gymnastic exercises should be airy, unencumbered with furniture, and, if possible, uncarpeted. The dress worn must be light, entirely without ligatures, tight, heavy skirting or impeding weights, and the feet should be shod with light, heelless boots or shoes. The time chosen for the exercise should be before breakfast or during the forenoon, preceded by about an hour the second meal of the day. These movements are all good, and for all subjects who have control over the muscles. The vibratory exercises are very beneficial.

EXERCISES REQUIRING VIBRATION.

The vibratory exercises are as follows:

Exercise No. 1—Stretch the hands above the head as far as possible, clench the thumb of the right hand between the thumb and first finger of the left hand. Now bend the body forward at the waist and stretch the hands as far as possible. The muscles must be held tense in the meantime; continue to bend until the hands touch the floor. This is difficult at first, and the beginner by the most strenuous efforts rarely succeeds for many days in touching the carpet or floor, but practice soon makes this a comparatively easy feat. Keep the thumbs clenched during the entire movement.

Exercise No. 2—Hands in same position as the first exercise. Bend the body backward as far as possible, keeping the thumbs always tightly clenched. Breathe rapidly, always through the nostrils; remain in backward position a few seconds. Resume first position slowly.

Exercise No. 3—With the arms outstretched at either side, bend the body at the waist very slowly until one hand points upward and the other downward. Remain in this position for a few seconds, breathing deeply through the nostrils, and then go to the other extreme of the movement.

Exercise No. 4—Stretch the hands out as far as possible, feet together, same position as No. 1, in exercise No. 3; twist the body and turn round as far as you can without moving the feet. Do this exercise slowly. Remain in position a few seconds; then twist the body to the other extreme. Breathe deeply through the nostrils.

Exercise No. 5—Place the hands on the hips. Stretch the body forward as far as possible, and then cause the body to vibrate rapidly back and forth. This will be found a difficult exercise, and requires considerable practice, but is very effective. It should be done only a few seconds at a time. This exercise will take the fat off the abdomen and the back.

Exercise No. 6—Stand in the same position as in No. 5, hands on the hips. Vibrate the body rapidly from side to side. Obesity patients need exercise no longer than four minutes a day. If the muscles are exercised longer they become weak, and the patient grows fatter as soon as the exercises are left off.

ANOTHER SYSTEM OF PHYSICAL CULTURE.

While I dwell particularly upon this new system for reducing fat, chiefly because it is so very difficult for a very fat person to take violent exercise, it is only just to add that its originator believes it the only physical culture system suitable for all persons, fat or thin, plethoric or anæmic.

Exercises advised, other than those especially described, are as follows:

To develop the muscles of the upper part of the body and to increase the bust and expand the chest, point the hands downward, extend as far as possible the muscles held tense; vibrating the hands and arms, raise them as slowly as possible as high as one can reach above the head. The more slowly this movement is performed the greater the benefit derived.

Air must be taken into the lungs in unison with the movement, so that by the time the hands are above the head the lungs will be filled. The difference between this movement and ordinary nasal breathing is wonderful.

For development of the chest muscles and those of the shoulders place the hands on the hips, contract the muscles and vibrate them for one minute.

For muscles of the lower part of the trunk, hold the body muscles rigid and vibrate from side to side. As a corrective against corpulence

and for reducing the size of the waist this exercise is stated to be far superior and quicker in its results than any other. This is the exercise before referred to; it is advised for slight women also. One lady was directed to perform the exercise twice a day for two minutes at a time, and in one month she had reduced the size of her waist four inches.

For the muscles of the neck and upper part of the shoulders, hold the neck muscles rigid and vibrate for one minute; rest for a minute and then vibrate the head sideways.

To develop the muscles of the arms, clench the fists tightly and bring them together across the chest, about as high as the top button on one's coat, tense the muscles hard and vibrate the hands, wrists and arms strenuously for a minute.

Extend the arms straight in front, palms upward on a level with the chin; tense the muscles hard and vibrate the hands, arms, shoulders and upper part of the body for one minute; one minute's rest, and then repeat with the palms held downward.

HOW TO STRENGTHEN THE LOWER LIMBS.

For strengthening the legs and thighs, grasp a chair and lift one foot from the ground, bending the leg at an easy angle; tense the muscles hard and vibrate vigorously for a minute.

Don't forget that in order to get the greatest amount of good from your breathing and physical culture movements, the body should receive at least one scrubbing and bath every day, to remove all effete matter and keep the pores of the skin thoroughly open.

Professor Blaikie thinks that almost any woman under forty, even though she has been cursed with a thin, narrow chest, half-used lungs, and scrawny arms and legs, may in a few months, by systematic graded exercise, largely remedy this want of development, and he justly contends that careful employment of wooden dumb-bells weighing two pounds each, or of clubs of three pounds, or of pulley weights of ten or fifteen pounds, is not half so dangerous to the organism as a sudden run to catch a boat or train, taken by one who is out of the way of running, or who perhaps has never learned.

Professor Blaikie gives as a further illustration of the almost miraculous effect of exercise in obviating the tendency to consumption, the case of Dr. G., of Boston—who, as shown by a photograph of himself, taken several years previously, had his shoulders warped forward, his

chest flat, almost hollow, and his face and general appearance suggesting a delicate man. He said, indeed, that he was strongly inclined to be consumptive. By practicing breathing, however—not on an ordinary "blowing machine," where the lungs are emptied of all that there is in them, but on an "inspirometer," from which, instead, one inhales every inch of air possible, and also by practicing vigorous working of his diaphragm—he had so expanded his lungs that he could inhale 380 cubic inches at one breath. Certainly, the depth of his chest at this later period was something remarkable, being apparently about fourteen inches through from sternum to spine, and a surprisingly broad chest as well.

But the most astonishing feature in Dr. G.'s case was the tremendous power of his voice. He said that at the end of half an hour's public singing with opera singers, whilst they were hot and perspiring, he was just warming up and getting ready for his work. One thing all who ever heard him sing would quickly concede: namely, that seldom had they anywhere listened to such an immense voice. He also claimed to have run two blocks in a single breath. His appearance was, as might be supposed, as little that of a consumptive as could be imagined.

A SUPPOSED CONSUMPTIVE LIVED TO BE OVER NINETY.

After a person of weak lungs has thus built them up above par, and attained for them more than average vigor, he must, however, continue to exercise and invigorate them by systematic training, lest they relapse towards their normally feeble condition. President Day, of Yale College, said to have been a consumptive at seventeen, by constant good care of his body, lived to be ninety-five, and it is far from uncommon for delicate persons, even if inclined to phthisis, who judiciously cultivate the small stock of vigor they have, to outlive sturdier ones who are prodigal and careless of their vital powers.

A famous example of the practical benefit of light gymnastic exercises is that of the venerable poet Bryant, who died at the advanced age of eighty-four, and wrote when he was seventy-seven: "I rise early—in winter, about half-past five; in summer, half an hour or an hour earlier. Immediately, with very little encumbrance of clothing, I begin a series of exercises, for the most part designed to expand the chest, and at the same time to call into action all the muscles and articulations of the body. These are performed with dumb-bells of the very lightest kind, covered with flannel, with a pole, a horizontal bar, and a light chair swung around

my head. After a full hour, and sometimes more, passed in this manner, I bathe from head to foot.

When at my place in the country, I sometimes shorten my exercises in the chamber, and, going out, occupy myself for half an hour or more in some work which requires brisk movement. Breakfast over, I occupy myself with study for a while, and then, when in town, I walk down to the office of the "Evening Post," nearly three miles distant, and, after about three hours, return, always walking, whatever be the weather or the state of the streets. In the country, I am engaged in my literary tasks until a feeling of weariness drives me out into the open air, and I go upon my farm or into the garden, and prune the fruit trees, or perform such other work about them which they need, and then go back to my books. I seldom drive out, preferring to walk."

This plan of the immortal author of "Thanatopsis" may suit a large majority, but when one finds her digestion is disturbed by her exertion before breakfast, as is often the case, such difficulty can generally be obviated by following the French fashion and that of the English athletes—that is, taking a roll, or even a soda cracker, with a cup of coffee, perhaps, (to stay the stomach, as it is popularly called), before commencing exercise.

HOW THE BLOOD GETS THE AIR.

The right side of the heart, which has for its business the pumping of the blood through the lungs, that is, through the pulmonary circulation, as it is called, sends it along through tubes which ultimately divide into very delicate blood-vessels, named capillaries, which are spread out in a fine net-work of meshes, just like those of a fishing-net, except that they are made with hollow pipes, instead of with strings, upon the surface of each pulmonary air-vesicle. By this means all the blood is exposed to the action of the air in the lungs without anything between the two fluids but an exceedingly thin membrane—the substance or wall of the capillaries—which is very far thinner than the finest paper that ever was made.

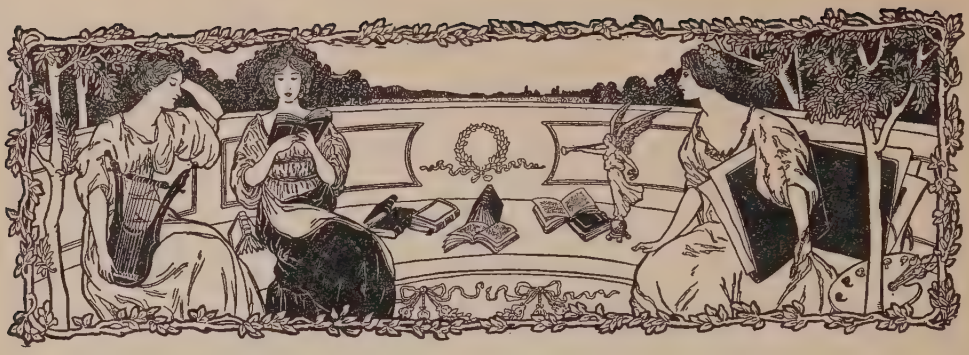
In this highly ingenious manner the blood is placed in the most favorable position for being purified and ventilated, so to speak, by losing its injurious gases and taking up a new supply of life-giving oxygen. Each lung is wrapped up in a sort of double bag, called the pleura, the surfaces of which, when they come in contact, are kept moist by their own secretion, in such a way that no friction or other interference with the proper expansion of the lung occurs. The painful disease called pleur-

isy, which is an inflammation of the pleura, is generally brought on by taking cold, and on this account it is very important to guard onesself against being exposed to cold or damp air when thinly clad about the chest.

The heart, which is a thick, strong, muscular bag, pumps the blood through the lungs as it goes round and round through the circulation, at the rate of about sixteen hundred pints of the vital fluid every hour. These sixteen hundred pints of blood, by being spread out in the fine network of delicate tubes in the walls of the air-cells, get rid of nearly sixty pints of carbonic acid, and absorb rather more than sixty pints of oxygen in that length of time. Upon this gaining of fresh oxygen and getting rid of stale carbonic acid unceasingly, our very lives depend; for, as demonstrated in hanging and drowning, if this interchange of the gases in the blood is interrupted, for even the space of a few minutes, death is the effect.

Whilst life continues, night and day, our hearts must go on pumping dark, purple, venous blood into the lungs, to be there purified and changed into red arterial blood by losing its carbonic acid and gaining fresh oxygen, which is carried to every part of our bodies, as has been just explained, conveying everywhere its new and vigorous life. Night and day, too, quite as unceasingly, must the lungs do their part, by pumping in fresh air to furnish this requisite supply of revivifying oxygen: and, what is almost equally important, they must pump out the air which has been partly deprived of its oxygen, and has received in its place the worn out and now deleterious substances got rid of by venous blood, among which the carbonic acid and animal effluvia, such as proved fatal to so many of the poor creatures shut up in the Black Hole of Calcutta, are the most important and dangerous to human life.

Accordingly, it is extremely essential that all parts of the lungs should be expanded, in order that they may constantly receive supplies of fresh air. The best way to do this is to observe the rules laid down in this chapter.



FEMALE BEAUTY.

CHAPTER XXIX.

THE culture of beauty is everywhere a legitimate art. But the beauty and adornment of the human form, the culture of personal beauty, and, in in our age, especially of female beauty, is of the first interest and importance. It is impossible to separate people from their looks. A woman's natural quality is to attract, and having attracted, to enchain; and how influential she may be for good or for evil, the history of every age makes clear. We may add, therefore, that the culture of beauty is the natural right of every woman.

It is not "wicked" to take pains with oneself. In the present day our altered system of education, and an improved conception of woman's capacities, may have a little blinded us. We have begun to think of the mind almost to the exclusion of the body. It is, perhaps, time to notice that the new views, whilst pointing to one truth, are in danger of eclipsing another: not, as some thoughtless people believe, that mental culture can ever harm a woman, or do ought but confer an added grace, but that the exclusive culture of one good thing involves a deplorable loss, whilst two good things do but enhance each other's lustre.

However important the mind may be in fitting woman for her place

in the world, either individually or as the companion of man, the body is hardly less important; and, after all, the old-fashioned notion that a woman's first duty is to be beautiful, is one that is justified by the utter impossibility of stamping it out.

I should be the last to imply that physical beauty is the only thing that can make a woman attractive. Many are attractive and magnetic without beauty as it is commonly understood, and some are too useful to provoke criticism; but physical beauty remains one of the sweetest and strongest qualities, and one which can scarcely be too highly valued or too falsely despised.

VALUE OF FEMALE BEAUTY.

The immortal worth of beauty lies in the universal pleasure it gives. We all love it instinctively. We all feel, more or less, that beauty (or what we think beauty) is a sort of necessity to us, like the elements. One of the best proofs of this is the fact that we generally invest with ideal beauty any face or thing we are fond of. The beauty of the skies and seas soothes and uplifts our hearts; the beauty of faces passes into our souls, and shapes our moods and acts. What we love is probably always worth cultivating; and when we love what after all has an enormous refining influence, its cultivation may even become a duty.

The power and sanctity of physical, as well as moral beauty, has been recognized in all ages. The early myth of Beauty worshipped and respected by beasts of prey is a suggestive and touching instance of this. The Greeks considered beauty so essentially a divine boon, that the mother prayed to Zeus that her child might be before all things beautiful. Beauty seemed to the Greek the visible sign of an inward grace, and an expression of divine good-will.

Thus it naturally came to be cultivated at Athens with an enthusiasm and devotion such as it is difficult for us to realize. It was a part of their religion, and the common phrase, the Good and the Beautiful, embodied the fact

It may seem strange that the Greeks, whose civilization had made them so sensitive to beauty of a certain order, should have remained to a great extent untouched by other orders of beauty which we value so deeply; but it is even more singular that we who know all that they knew, and have cultivated a susceptibility to sound, as in music, and color, as in painting, far more keen and complex than theirs,

should have become so careless of what they held highest—human beauty, and surroundings in so far as they affect human beauty.

The wisest of men has called physical beauty a jewel of gold, the value of which is not destroyed, but only checked, by its being occasionally found in a swine's snout; and though decking it with gold will never make a swine other than a swine, it is possible to cultivate the inner and the outer grace together, and it is possible to actually open a way for the development of the mental and moral good by smoothing the physical veil which encumbers and distorts it.

In fact, outward ugliness is an impediment in more ways than one; influencing the character in an unmistakable degree (hereafter to be shown), and influencing surroundings and the chances of life, far more than is generally admitted.

WONDERFUL INFLUENCE OF WOMEN.

The part which beauty played in the Middle Ages was a very real one. Woman, whose loveliness so swayed men, was at one time treated with something like divine honors, mistress as she was of the chief civilizing influence of the time. Books being few, and secular education nearly confined to woman, her mere knowledge gave her almost unlimited power over her rude, warlike bread-winner.

Whilst he could only fight in battle, or wring treasure by force from the traveller crossing his domain, she could often write or read a letter. While he could but teach the young hands to war, and the fingers to fight, to manage a fierce horse, or to bring down the quarry, the whole mental and moral training of the children and the household were in her hands. She could instruct them in the mysteries of their faith, the duties of their position, and teach them the hundred arts and occupations which engrossed the time of women when shops were not.

Knowledge is power; beauty and knowledge combined are well-nigh all-powerful; both belonged to woman, and she was, for good or evil, the incentive to action, the prize in the tourney, the leech who cured the sick and tended the wounded, the ruler of the servants, and the keeper of the castle keys. She it was who, pointing to courage and courtesy as the price of her grace, diffused courage and courtesy throughout the land. She it was who fixed the tone of morals and excellence in the court in which she reigned as queen. And she it is who (though books and education have come her master's way at last) still possesses a vast power for

good or ill, a power of which her beauty in the abstract is the pivot and corner-stone.

Darwin makes some very curious remarks on the different standards of beauty.

"Beauty seems to some people to mean a very pronounced form of whatever type of feature or hue we are most accustomed to; in short, the exaggeration of characteristic peculiarities. Thus the African savage with his black hide, his large thick mouth, small eyes, flat nose, and heavy ears, considers that woman most lovely who has the blackest skin, the thickest mouth, the least apparent eyes, etc. We Western nations, whose characteristics are a small oval face, colored pink and white, large eyes, prominent nose, and narrow jaw, think the excess of these characteristics to be beauty, and the deviation from them, ugliness."

STRANGE CUSTOMS OF SAVAGES.

The African savage considers the American woman hideous, with her front teeth unextracted and white, "like a dog's," her lips untorn by either a copper ring or a piece of wood, and her cheeks colored "like a potato flower." The American recoils from a Nubian lady, whose smile brings her lips on a level with her eyebrows, and draws her nose back to her ears.

There is no doubt a great deal in this theory—much more than we can at once realize—that beauty of form, like the colors of the prism, is non-existent except in our own eyes and minds. I do not, however, endorse it. I believe that there are abstract rules of beauty distinct from the charm of the habitual. But however this may be—for I am not concerned with definitions of what constitutes beauty—still on the lowest ground, the pleasure excited in the mind by what seems to each to be beauty—even supposing it to be a flat nose—is so immense, that it has always been held worth living, and fighting, and dying for.

Is it not then a kind of duty to make life beautiful—to disguise deformity, to provide by care and forethought for others, a pleasure which costs so little and brings in so much even to the giver, that one is tempted at times to fancy vanity itself but the abuse or exaggeration of a natural and noble quality—since it seeks, in the pride of beauty, a possession which tends to refine and elevate the mind, and increase the sum of human happiness in a number of direct and indirect ways.

Those whose taste has been cultivated by having beautiful things

always about them, are incredibly sensitive to awkward forms, inappropriate colors, and inharmonious combinations. To such persons, certain rooms, certain draperies, certain faces, cause not only the mere feeling of disapprobation, but even a kind of physical pain. Sometimes they might be unable to explain what affected them so unpleasantly, or how they were affected, but they feel an uneasy sense of oppression and discomfort—they would fain flee away, and let the simple skies or the moon with her sweet stare, soothe them into healthy feeling again.

This sense of oppression would probably be neither understood nor believed in by the ordinary run of educated people, in America, at least. But it is very real to those whose passionate care for the beautiful makes it a kind of necessity to them—and they are the subtle and delicate souls that build up the art-crown of a nation. The uneasiness to which I allude, is very similar to what we all feel more or less, according to our constitutional susceptibility, in the presence of unsympathetic persons.

WHAT IS NATURAL TO WOMEN.

No woman can say truthfully that she does not care whether she is pretty or not. Every woman does care. The immutable laws of her being have made physical attractiveness as much a natural glory to her as strength is to a man.

Here I may be told that what I am saying is superfluous, for perfect beauty has no need of art to enhance it, and that those who have been born with hard, or worse, with perfectly uninteresting features, do not want to be told that physical attractiveness is indispensable to them. But it is especially to the plain and to the generally ill-favored that I address these words of advice and warning, and should Beauty's self find a few useful hints, I see no reason why she should not avail herself of them.

I know that there are people who look well anywhere or anyhow; no vulgarity, no carelessness of speech, dress, or attitude seems able to dethrone them; but these rarely gifted persons are but the exceptions that prove the rule; and even in their case what Sir Philip Sidney spake is true—there is that in well-chosen surroundings

> 'Which doth even beauty beautify,
> And most bewitch the captived eye;'

and Herrick, too, in his "Poetry of Dress," seems to have had an astute appreciation of how beauty may be beautified. These men lived in the sixteenth century—a time when color in dress was still an understood

and valued adjunct, and before we had learned to make our dwellings intolerable to the eye.

An immense number of ill-tempered ugly women are ill-tempered because they are ugly. They do not know it; their friends don't understand, and make no allowances; but heavy, indeed, is the burden upon these poor women, and pernicious is its effect on their moral character very often. I have heard it said that ugly women are always bad-tempered; this is an over-statement, but there is a certain degree of truth in the saying, cruel as it is.

An ugly child cares nothing for its ugliness, but when it grows older, and perceives that it lacks something which is prized and honored, and is twitted with the deficiency, and neglected through it, and is reminded of it every time it looks in the glass or in another face, the constant disappointment begins very early to embitter the whole nature, and creates a melancholy shyness; and when the desire to attack awakes with years, and the young girl finds her fairer friends preferred before her, the vain endeavors to please by other means dishearten her, and she grows sarcastic, ill-natured, envious of everybody, though half unconsciously; many other faults follow, and she becomes unhappy and morose.

NO WOMAN NEED BE UGLY.

But one chief aim I have in writing these reflections is to prove that no woman need be ugly if she knows her points, and points of attractiveness every woman has. There is manner, there is mind, as well as physique; but whilst I should advise all women to become as intelligent and clever as they can, whether they be plain or pretty, still I wish mere beauty and the study of "points" were made more an acknowledged and honorable art than it is, by all those to whom God has given eyes and an intelligent brain. It is *not* a sin or a folly to long, as every woman longs, to be lovely. She is so constituted, and her beauty "is a glory to her."

After all, what *is* vanity? If it means only a certain innocent wish to look one's best, is it not another name for self-respect—and without it, what would woman be worth? If it means inordinate self-admiration (very rare among persons with some occupation) it is less wicked than absurd. We are too timid of names; but it were wise to examine our bugbears before handing them down to posterity.

The English and American women are considered by all nations to be among the most beautiful in the world, whilst the French are commonly

far less gifted by nature, but a Frenchwoman understands how to hide her defects and enhance her beauties to a far greater extent than others—and this, not because her moral character is necessarily lower, but simply because she belongs to an artistic race, cultivating æsthetic tastes—whereby sculpture, and painting, and music, and beauty within and without are regarded, not as distinct trades, but as parts of a duty owed to our fellow creatures, and to the best that is in us.

But after reading the foregoing voluminous advice, my young lady friends may still ask the pointed and practical question—"How am *I* to make the best of myself?" I can only offer a few closing suggestions and episodes in the hope of applying my general rules to particular cases.

Girls may be divided into two classes—the Visible and the Invisible. A girl is invisible when for any reason she fails to attract: and to attract is the indispensible attribute of woman *par se*, without which she may be, no doubt, a capital individual, lay-figure, buffer, "brick," or anything else good in its way, but not a woman; just as a magnet that has lost its magnetism might be called a good stone, a weight, a stopper, or what not, but hardly a magnet.

GIRLS EXPECT TO BE MARRIED.

But Beauty blushing unseen is a waste of wealth which political economy forbids us to sanction. To be beautiful implies to be seen, and it follows that one of women's first duties is to be visible.

Most girls look forward to getting married. They are right. It is a woman's instinct. Most mothers hold out marriage as the chief aim of a girl's existence. They are right—it is so; but it is a pity that they do not tell them why it is so.

Marriage from a right point of view is indeed the "better part." To be the companion and help-meet of another soul—to select a life-companion whose guidance and sympathy will raise you—to beget and to mould the spirit and mind of the new generation—and to fit oneself for these supreme duties—what can be a higher and grander choice? The single woman's part in life may be a noble one, she may elevate herself, she may help others, but hers must always be the secondary place. She is never fulfilling the *whole* position which nature intended her to fill, however fully she may do her part; but the wife and mother is a crowned queen.

The Jews, to whom, however persistently we have oppressed them, we owe at least our entire religious teaching and scheme of morals,

rendered a rare homage to woman married. To her, as Emanuel Deutsch pointed out, the Talmud ascribed all the blessings of the household. From her emanated everything noble, wise, and true. It had not words enough to impress man with the absolute necessity of getting married. Not only was he said to be bereaved of peace, joy, comfort, and faith without a wife, but he was not even called a man. "Who is best taught?" it is asked: and the answer is, "He who has learned first from his mother."

Again, the Talmud says, "He who sees his wife die before him has, as it were, been present at the sanctuary itself—around him the world grows dark." The value set by the Jews on family life may indeed be founded on the requirements of a social state now passed away; but the last quotation certainly embodies the idea of woman not as a mother only, but as the help-meet, the guide, the keeper of the house, which every thoughtful woman hopes to be in marriage.

LITTLE OFFERED IN EXCHANGE FOR MARRIAGE.

But all cannot marry. It remains to be seen who will. Alas, when people complain of men not marrying (even they who are able), they forget how little women offer in exchange for all they get by marriage. Girls are so seldom taught to be of any use whatever to a man that I am only astonished at the numbers of men who do marry! Many girls do not even try to be agreeable to look at, much less to live with. They forget how numerous they are, and the small absolute need men have of wives; but, nevertheless, men do still marry, and would oftener marry could they find mates—women who are either helpful to them, or amusing, or pleasing to their eye.

Society is like a crowded picture, in which here and there a bit of bright color or a gleam of sunlight brings into relief one object or another: but the mass is confusion. These brightly colored figures are the visible ones, and the rest are but a background to throw them up. Why don't girls marry? Because the press is great, and girls are indistinguishable in the crowd. The distinguishable ones marry—those who are beautiful or magnetic in some way, whose characters have some definite coloring, and who can make their individuality felt. I would have said—who can make themselves in any way conspicuous, but that the word has been too long associated with an undesirable prominence. Yet, after all, prominence is the thing needed, prominence of character or individuality. Men, so to speak, pitch upon the girls they can see; those

who are completely negative, colorless, formless, invisible—are left behind. I am prepared for a scream from the strong-minded, who are superior to marriage, and think that a single life is the higher aspiration for the girl of the period, as in it she has more scope for the development of the *ego*. I do not think so; I agree with the Jews; but to those otherwise minded, I humbly point out, that no one need marry who does not choose. A man may lead the girl he loves twenty times to the goal of proposal, but he can't make her marry him, so there is no cause for fear.

But whether a girl marry or not, her possession of energy to strike out a new line and fit herself for a worthy and industrious single life, at once links her with the Visible ones: for my "Visible" means rather perceptible than obtrusive. A woman may be conspicuous by her virtues, her talents, her industry—as the violet is by its scent, but nothing except want of energy and character can virtually make her invisible.

HEALTH AND BEAUTY TO BE COVETED.

Blue-stocking or not, every woman ought to make the best of herself inside and out. To be healthy, handsome, and cheerful, is no disadvantage even in a learned professor. It is one of the most potent objections to the cause of female education, that clever women go in for huge boots and Gampian umbrellas, setting at naught many graces essentially womanly and indispensable in woman; and the fact, which really has some truth in it, positively damages the cause.

Recollect that you have a body, although exceptionally gifted with a mind: a little attention to it will neither nip your mental powers nor impede you as you clamber up the tree of knowledge. Busy sisters, if you climb at all, climb gracefully, rather than bring the tree into disrepute. The apples are worth winning—they are even worth your setting a good example to those who crowd the foot!

The nonentity is often at first rather pretty. Here is, however, a prettiness evanescent in its very essence; for the face being a reflection of the mind, and the mind obeying a universal law and withering under disuse, she lacks the life-giving element which lies in the mind. The prettiness of mere youth lasts a year or two, during which, if poor, the nonentity is idle, and ultimately starves. If rich, she lies in bed late, does a little worsted work after breakfast (always in villainous colors), varied by scribbling vacant little notes to everybody she thinks likely to read them; and spends the afternoon under a pink parasol in the park.

She dines out, and goes to balls—no one quite knows why; she is no great acquisition in looks, and her conversation cannot be the attraction, for she has none! The nonentity would be bored if her partners alluded to any subject outside the small round of petty joys which make the occupation of her useless life; and boredom might bring a few months too soon the lines in her face which it is her only chance to stave off. The nonentity never reads, never thinks, never does anything for anyone, and never improves; had she any sense of her position or any will to amend, she would not be a nonentity.

The nonentity may marry—if she has a fortune; and in wedded life is utterly unfit to be a wife or mother. Cheated by the servants, by the dressmaker, disobeyed by her children, neglected by her husband, it never occurs to her to question whether her own uselessness is to blame for her solitude. All find their lot complete without her. Winning neither love nor hate (there is nothing definite enough in her to awaken either), if she steers clear of the many snares that beset social life, it is only by chance; if her children turn out well it is in spite of her; and, at length, the death notices will tell us where and when the nonentity took herself out of the way.

SCANDAL-LOVING OLD MAIDS.

If the nonentity does not marry, which is likeliest, her case is worse. She soon fancies herself ailing, grows querulous; she fritters away her foolish youth, and wanes into that most odious of social thorns, a mischievous and scandal-loving old maid. Not what the old maid may be, and so often is, the loving and valued friend, the ready comforter, the industrious promoter of many a good cause, helper in a hundred ways, as only a free and unattached woman can be; for this is invariably a woman of mind and heart, who need not have been an old maid, but who chose her lot—one of the visible blessings of life.

The nonentity finds no real friends, for friendship exists only on the basis of a mutual "give and take" of interest or advantage, and there is no interest in her.

To the ill-educated girl, I have but one word to say: educate yourself—somehow to some extent, whether parental neglect or your own indolence be to blame for your fault. The disadvantage of not knowing the commonest things is felt most in elder girlhood—you cannot join in, you can only interrupt a conversation; but books are so cheap, and your

leisure probably so large that there is little to prevent an effort to redeem lost time.

However gaily clad in other people's hair and as many dead birds as a savage, the maiden can never be more than a laughing-stock, who believes that Alexander the Great conquered Britain, and that Newton invented electricity.

To the Discouraged girl I sound the counsel. Be so no longer! Up! up! Forget the past. Forget the sneers of cousins and sisters. Forget the coxcomb who grew tired of you and married someone else. Forget the mistakes you have made—so many are worse than you! Up! up! things mayn't be so bad, there are still pleasures in life, there is still work to be done, there are still friends to be found!

TROUBLES OF THE SHY GIRL.

The shy girl can do something to help herself. She can force herself to talk. She can constantly bear in mind that a certain amount of confidence in her own powers is needful to bring out whatever powers she possesses; nay, that complete withdrawal from the strife of tongues is a form of selfishness which often shackles and depresses those about her. There is the girl who is shy from believing that she is not "clever enough" to talk; the girl who has "nothing to say"—why, let her read the papers and talk about the giant gooseberries rather than be mute; even an inveterate habit of blushing may be brought within reasonable bounds.

At whatever cost, come out of your shell. Do not sit dumb; for this oppressive shyness, from being the cage in which your ideas die as they try to emerge, will after a time become the unwholesome vacuum precluding the very birth of them. Silence which forbids the utterance of thought not seldom destroys the capacity for thought. From being a very silent girl, you may become a very stupid women; the vital force which once gave you unused ideas will cease to traverse your brain at all, and you will end a burden to the community.

It must be clearly borne in mind that shyness can be conquered, if not wilfully encouraged, just as it undoubtedly can be fostered by indulgence; for as our desires act strongly upon our will, so it is possible for our will to act on our desires, controlling both our attractions and our repulsions. Shyness is a kind of collapse of will, a form of moral paralysis; but we can strengthen the natural powers of our will as we can

strengthen a feeble limb, by steadily exerting it, and each effect will make the succeeding effort less painful. How often one sees children, too young to be reasoned with, suffering almost physical pain for shyness, and making everybody suffer with them, till a merciful nurse removes them!

To the stupid girl I have I fear little to say; she is the most hopeless of the invisibles. She is a bore in and out of her family circle; yet she may perhaps be of use in hemming dusters and doing what she is told.

It may, however, be comforting to know that a thoroughly stupid woman is a *rara avis* (and in these days every rarity is a prize). Therefore, do not venture to conclude that you come under this class on the mere authority of rude brothers and unsympathetic mammas.

GIRLS WHO ARE CALLED STUPID.

Yes. The stupid girl is often miscalled. Plenty are voted "stupid" whose capacities lie outside the sphere of their fellows, or rare of another order. For instance, in an energetic family, one weakly member may lack her sisters' application to given tasks; or in a conversational circle, one member may have no head for dates, events, no sense of certain kinds of humor—yet may secretly be a miracle of presence of mind. Or in a literary family, one member may hate the sight of pen, ink, and books, yet may possess a sweet voice. These may possibly each be voted "stupid" by those who do not understand them—too often one's own immediate companions; yet were their latent talent developed, not stupidity but genius might be drawn forth.

Let everyone who has been branded as "stupid" examine herself steadily, coolly, and in secret. Let her consider what she takes most pleasure in, what she can do best or least ill—and let her patiently set about improving that little germinal faculty till she sees her way to being of some use to somebody. When she is that, she will know she is no longer invisible, but a visible ministering spirit.

Can she not sing? perhaps she can write. Can she not do the simplest sum? perhaps she can nurse the sick. If she cannot understand a problem, or a joke, or draw an inference, or learn languages, or play chess, or catch a tune, perhaps she can act, or cook, or paint, or manage a garden, or comfort the sad or teach children (which not everyone can do, however clever, and seldomest those who can do nothing else).

Whatever she thinks she likes doing, let her try to do it well, at whatever cost of trouble or money, and in spite of all dissuasion.

Come forward, "stupid" friends, cast off the stigma which is enervating you, cultivate your powers of helping, and don't for pity's sake neglect your powers of pleasing.

MAY BE PLAIN BUT WITTY.

The plain girl, I am speaking of female beauty, is the most promising of the group. People can't make themselves witty if they were born with a sluggish circulation of blood to the brain; they can't be clever if the cerebral works have been left out of their composition; but they can by the aid of dress make themselves ornamental if they are plain. Lord Chesterfield said, no woman is ugly when she is dressed; that is truer of our day even than of his, for the wind is tempered just now to the shorn lamb. Those dear and much abused "præ-Raphaelite" painters, whom it is still in some circles the fashion to decry, are the plain girls' best friends. They have taken all the neglected ones by the hand. All the ugly flowers, all the ugly buildings, all the ugly faces, they have shown us have a certain crooked beauty of their own, entirely apart from the oddness which supplies the place of actual beauty sometimes, and is almost as attractive. There is a charm in low coloring, in straight or irregular lines, in restful tame faces *per se*. The præ-Raphaelites have taught us that there is no ugliness in fact, except deformity—nay, even that sometimes is not ugly, for things are all comparative. Do not some people admire a cast in the eye, a slight goitre, even a limp?

Morris, Burne Jones, and others, have made certain types of face and figure once literally hated, actually the fashion. Red hair—once, to say a woman had red hair was social assassination—is the rage. A pallid face with a protruding upper lip is highly esteemed. Green eyes, a squint, square eyebrows, whitey-brown complexions are not left out in the cold. In fact, the pink-cheeked dolls are nowhere; they are said to have "no character"—and a pretty little hand is occasionally voted characterless too. Now is the time for plain women. Only dress after the præ-Raphaelite style, and you will be astonished to find that so far from being an "ugly-duck" you are a full fledged swan!

Thus, if pretty, you can do as you like: you can't be spoilt except by time. If plain, you cannot do as you like: you must adopt quaintness of action and of garb; but time is powerless to spoil you, and in the

long run you have actually the advantage. Whilst your pretty sisters are fretting over their lost bloom, you flourish ever in your soberer hues; the losses of age are more easily replaced in you than in them, and the probability is that you are more popular.

But to gain this end, care and thought must be employed. No one can be great without working for it. Take the utmost care in selecting good and indescribable colors, and graceful forms, whether fashionable or no—study your countenance, and dress your hair as best beseems it, whether gibes pursue you or applause. Take pains with your manners, be patient with scoffers, yet inflexible, and in a very short time a merry harvest will be yours!

DISAPPOINTMENT OF SUITORS.

Suppose me to be an eligible suitor. I go one evening to visit a family of sisters, well-born, well-educated, and sufficiently well off. The eldest is called Emily. She is not pretty, and never was, and has now reached eight-and-twenty, and become the chaperone of her younger sisters. She has never been engaged, and seems to think that as her fourth sister is now eighteen, she has herself no further chance of marrying, and has only to accept cheerfully her *role* of old maid of the family. It is no doubt her destiny never to be cared for by anybody, and she was intended for one of the useful ones. So she goes in for being fearfully useful, is an admirable daughter, despises amusements as "nice for the young ones, but rather frivolous," wears her soft brown hair scraped down on each side of her face "tidily," high unfashionable dresses in the evening, thinks of everyone's comfort and happiness but her own, and refuses to dance.

I find Emily, on my arrival, in a dark silk dress knitting a stocking, in the strongest light in the room. As the gas pours on her patient face, I notice instantly that she is somewhat *passee*; in any other place this might have been unobserved, for I know her to be only twenty-eight, though to-night I find it difficult to believe it; her features are well-formed, but the style of dressing the hair absolutely forces on your attention the increasing hollowness of her cheek.

I remember a young fellow who liked her very much last year, and would probably have ended by telling her so, but he could not stand her practiced old-maidish ways and sayings; in short, he could not propose to a girl who would not sit still for a single moment without knitting. I

have seen Emily look younger than she looks to-night; but that was one sunny day in a room whose pink blinds were drawn down to the ground.

Emily shakes hands, with fingers entangled in grey worsted, knits hard through my second sentence, and then, lest attention to me should cause her to drop a stitch, I go off to find Alice, who is the pretty one of the four. A prettier girl I have never seen than Alice—as she looks sometimes; but she makes terrible mistakes. She has what is called golden hair—that is, drab. She has heard that people with fair hair ought to wear blue. So she wears blue—a shade too dark, which does not impart a scrap of yellow to her hair. She has a velvet band fastened tightly across it—her head is not of a pretty shape, though she has a sweet smile—she does not know that a broad band across the hair is the most trying thing in the world—not one head in twenty can bear it.

ABSURDITIES OF DRESS.

I don't discover her for some minutes; the drawing-room is a very gay one, with sky-blue doors, and white walls and ceiling. Presently I discern Alice sitting against the blue door in the usual blue dress a shade too deep. She informs me that I have passed her twice—I do not think I am to blame! Her next sister, Dora, is standing by her in white: her dress is cashmere, and though evidently new, from the angular form of the plaits and the loud crackling of the lining, it naturally looks dirty against the snowy freshness of the paper on the wall. Having just come in from the dark street, the extreme whiteness of the room dazzles me; I can't see outlines. Dora is very sallow, and unhappily carries a blue fan, which makes her look as yellow as a guinea.

Clemence "came out" last week, and is nearly as pretty as Alice in her way. She has a dark complexion which, when she has a color, is very clear and beautiful. She is a little coquette, and just now when she does not know I am watching her, she looks charming. I can just see her profile against a pure yellow screen which I have always hitherto hated for its raw color, because they generally have the gaslight sharp upon it. To-night the lamp happens to be on one side, and the hue which it borrows in the half-light enhances the slight flush on Clemence's cheek. I cannot see her dress for a large crimson chair stands between us. She knows I admire her. When she observes me she will blush, and perhaps banter me. Now she turns and comes forward.

Alas! she wears a satin dress of the exact color of her face, with

flounces up to the waist. I had always fancied her tall: to-night she appears hardly four feet high: this is caused by the flounces. I am disappointed, and liked her better behind the chair. As we speak she turns her head over with what would be a pretty gesture if she had not a scar on her throat, and places against her cheek a scarlet fan—this is the finishing touch which takes away absolutely every vestige of her color. She looks positively hideous as she stands. I will go back to Alice.

Alice has the prettiest of shoulders, and perhaps that may excuse her for adopting a fashion so ugly as a low dress. Her arms are a little too fat, and rather red at the elbow. The hard straight line around her neck, trimmed with hard X's in blue velvet, would ruin any neck but hers. Imagine Sir Thomas Lawrence painting a lady with such a pattern on her dress! She is occupied in welcoming some guests.

OLD LADIES WHO ARE TERRIBLY THIN.

Who is the young lady who has just come into the room with a lady so fat and so scantily dressed that her friends ought to shut her up? Her gloves are cutting through her wrists, her voluminous white and pink train impedes her already difficult progress. I don't know which of them is most offensive. The old young lady is terribly thin. There is a frightful hollow in her back; the vertebræ of her spine are like a crocodile's; but she obeys the fashion heroically. She has also lost a tooth. Probably she is one of Emily's sort—abhors what is false; her hair is very thin, so much so that it would be true to say that she had none, but she would scorn a single band of false hair.

My hostess's daughters are better than this; I perceive Emily's foot: it is large: she seems rather proud of its size, and protrudes it, incased in a conspicuous white kid sheath considerably too big for her, as a mark of her superiority to these considerations of form. Alice, I know, has a tiny little foot: to-night it is entirely concealed by the most enormous rosettes I have ever seen, and might be as big as a Pict's—that canny race who made a virtue of necessity and used on sunny days their feet for umbrellas.

The last straw has been laid on my back, and I take my leave.

To a man who has a quick eye for the picturesque, or, let us say, the fit and proper, and there are such men, these sights in modern drawing-rooms are more than disagreeable—they are ghastly. I am saying nothing about indecency. That is hardly a portion of my present subject.

But why, if a woman has a neck like a skeleton, must she tell the world so? Why, if fate has made her grow stouter than it is permitted to be, must she squeeze herself into the tightest of costumes because it is the fashion? Why must she draw a hard line around her shoulders, that seems to cut her in two, and wear sleeves which are mere straps to keep her gown on, without caring, without knowing, whether her arms are pleasing to see?

Why must she wear trimmings of great O's and X's and vandykes on her skirt, so that at a little distance the first thing about her that strikes the eye is the trimming? Why, if very tall, must she take the arm of a very little man, and make herself and him look absurd? Why will she draw attention to her want of color by wearing red or arsenic green? Why, with red hair, is her dress pink? Why, when in a very pale dress, does she lean against the wall which ignorance has papered with white? Why, with black hair, does she carry a heavy burden of jet flowers, combs, and impossible thick plaits, till her head seems like an elephant's on an antelope's body? Why will she trust to the very moderate gifts nature has endowed her with, to fight against the most abnormal disadvantages?

Why—why—but enough—these are only some of the insane mistakes that nearly all girls commit, many of them girls with artistic tastes and capacities, in every direction except dress, whose eyes you may see shine with pleasure at a sunset or a bean-flower—which, nevertheless, they steadily refuse to take a hint from?

Very few women know what style of dress suits them best, or what colors: some neglect themselves like Emily; even those who, like Clemence, study the art, study it wrongly. One may often see a woman who has the makings of a dignified goddess all bent up, or a little creature attempt to be stately who can only be simple. The best grace is perfect naturalness. Our manners form themselves, but we must form our setting of them. Nature can do much, but not everything. Art should lend a hand.

IMPORTANCE OF DRESS.

CHAPTER XXX.

AS in our age and climate the human body is habitually and completely veiled, the veil assumes an artistic importance second only to the forms that are hidden. In nothing are character and perception so insensibly but inevitably displayed, as in dress, and taste in dress. Dress is the second self, a dumb self, yet a most eloquent expositor of the person.

There are garments, as there are faces and natures, who have no "bar" in them—nothing which stops with a sudden shock your pleasure in them, nothing that dissatisfies or perplexes you. There are colors that are always beautiful because they recall nature, fashions which are beautiful because sensible and fulfilling the aim for which they were invented. In fact, no dress can be beautiful that is not appropriate, and appropriateness consists chiefly in graceful expression and useful purpose.

In modern days—so far removed from those when dress was regarded as a mere covering, and aspired to be no more (although it always admitted of decoration, such as jewelry or needlework)—we no longer look upon a gown as a shield against wintry cold, or a modest veil drawn between ourselves and the outer world. We expect it to be a work of art. Much money, representing much labor, is lavished upon every garment. When the silk-weaver has spent his skill upon the production of even texture, delicate gloss, and rare tints, only half the work is done.

We cannot fling and fold the rich piece upon us after the simple fashion of our forefathers. We want it more to express than to hide us.

A clever craftswoman must cut it to the approved shape, and sew it into form; it must be clothed upon with other and richer fabrics, which we call "trimming," until its original price is doubled. Every form is eagerly borrowed for these trimmings. Patterns old and new are exhausted to form attractive combinations—the Greek frieze, the mediæval missal-border, the whole animal and vegetable kingdoms are laid under contribution—our very discontent with all there is, and our insatiable cravings for novelty, is one of the diseases consequent on a certain repletion of variety. Raised work, indented work, tabs, fringes, frills,—there is no possible form of ornament that we have not tried and cast aside. So that a dress now claims to be considered as a work of art.

VULGAR TASTE IN DRESS.

Now, if dress be worth all this elaboration, if it intends to reach, as it evidently aspires to do, the platform of a picture, or a poem, or a fine building, the art it adopts must be either good or bad art. I believe the melancholy truth to be that we can hardly find a modern dress which is not throughout in the worst taste and opposed to the principles of all good art.

Yet, at the same time I think that to a certain extent the milliners mean well. I think that the women who spoil themselves with the milliner's devices mean well too. They do want to make the best of themselves, to be "things of beauty," and not eyesores. But how to do this they don't know, and they don't think, and they generally refuse to learn. There are some ladies who always look well; they are not necessarily the pretty ones; but they are women gifted with fine natural taste, who instinctively choose right forms, colors, and fabrics, generally without knowing why. These, however, are exceptions.

If everybody who could hold a pencil were suddenly called upon to paint a picture, there would be only a few out of every score at least who would betray any sense of grace, perspective, color, or design. Would it not be wise for those unpossessed of the sacred fire to receive instruction of some wholesome kind before they wasted time and good material to so little purpose?

But what is true of painting is true also of dress. We need not all paint, but we have all got to dress, and the sooner dress is recognized

by our women as an art-product, the better (and probably the more cheaply) they will be able to apparel themselves.

What usually takes place in this country in the matter of dress? Vain persons who are proud of their appearance, and wish to make the most of themselves, spend much time in covering themselves with things that make an artist lift up hands and eyes of regret, astonishment, and pity. Those who are not vain often exclaim, "Don't ask me! I will wear anything that is brought to me!" and both act from ignorance. The vain person wastes time and defeats her own aim; the other is too ignorant to know that there is anything to know worth knowing, and does not sufficiently respect what God has given her, to care how she looks; so there is always a discord between her inner and outer self.

Yet, dress, and a proper care for it, ought not to minister merely to vanity, nor impair in any degree the moral tone. A woman ought to care what she wears for her own sake and for the sake of those about her. It is a fault, not a virtue, to be reckless as to the impression one leaves on the eye, just as it is a fault to be indifferent to the feelings of others: in either case there is a sad absence of those subtle and beautiful perceptions that constitute a delicate and gentle mind.

INDIVIDUAL TASTE SUPPRESSED.

But how difficult it is for a woman to be really well dressed, under the existing prejudice that everybody must be dressed like everybody else! This notion of a requisite livery is paralyzing to anything like development of individual taste, and simply springs from the incapacity of the many to originate, wherefore they are glad to copy others; but this majority have succeeded in suffocating the æsthetic minority, many of whom are now forced to suppress really good taste for fear of being called "affected." We shall never have any school of art in America, either in dress or decoration of any kind, until the fundamental principle of good art is recognized, that people may do as they like in the matter, and until women cease to be afraid of being laughed at for doing what they feel to be wise and right.

There can be no originality of scheme until individual taste is admitted to be free; and how can there be individuality while all are completely subservient to law, that law usually determined by folk who have neither natural feeling for beauty nor education?

With regard to the milliner, ladies should remember that by trusting

to the milliner's "taste" (?) they are merely playing into the hands of various tradesmen whose interest it is to sell their goods, be they good or bad. The manufacturers' mill must be kept going, therefore the fashions must change; the milliner loves her perquisites, therefore she encourages every fashion which is of a kind to deceive the eyes as to quantity of material. It is to her interest that you should not be able to measure the exact number of yards she has used; it would be to her customer's very considerable interest did the customer calculate and understand more than she usually does, how much stuff is required for flounce, skirt, or sleeve!

It is as absurd to suppose that every variety of short and tall, grave and gay, young and old, must be dressed in one style, as that the same coat must fit every man. How should it be so, whilst nature revels in endless dissimilarity? Why is the woman with taste for color and form to sacrifice her gift to the others who have it not, and copy, when she is capable of originating? Why is one's individuality, so clear within, to be confused without?

TIED TO IGNORANT FASHION.

Alas! perhaps it is a misfortune to be an individual at all. We know the pity, the deep commiseration which satirists say ill-natured women feel for those who are congenitally conspicuous—for good looks. Is it a similar commiseration for those who possess the next best thing, good taste, which has destroyed the interpretation of a beautiful mind, as it would like to stamp out a beautiful body?

If so, in the name of art and nature both, let us shake off the lethargy which immolates us to a Juggernaut of ignorant opinion, and let us assert our individuality, if we have any, in dress as in other things. Woman is most beautiful when she is most herself and least conscious of it—in dress as well as in other things: and as I am at present treating chiefly of her looks, which depend in great measure on her dress, I may lay down as a general principle that dress is most beautiful and most becoming when it follows the outlines of the human form.

Dress bears the same relation to the body as speech does to the brain; and therefore dress may be called the speech of the body. Speech was supposed to be meant for the expression of thought, till a modern cynic told us it was on the contrary for its concealment. Dress once expressed the person, now it disguises it; well, disguise may sometimes be necessary—but when dress carries its anatomical fictions as far as evasion may

be carried, as far as falsehood, it ceases not only to be respectable, but beautiful as well. Observe further, that plenty of time—too much—is given to the dressmaker. Very little is given to dress itself; no thought is expended on the dress requirements which the dress is to supply. No American woman considers the meaning of each trimming, or form, or color. She does not even consider whether it expresses in any degree her character, tastes, or wants.

French women, on the contrary, have carried too far the idea of dress as an index of the inner self. They have got a right notion by its wrong end. Without ever, or seldom, producing a costume which is really beautiful, meeting all needs, they have originated a kind of language of dress more vulgar and less excusable than the Italian language of flowers, which, apparently, is intelligible to a certain class of people, but in my opinion, robs social intercourse of its spontaneity and self-unconsciousness, and, in the case of dress, degrades woman to the level of a walking advertisement—of something baser than trade prices.

TASTE SHOULD HARMONIZE WITH CHARACTER.

It is true that the colors and forms we employ should reflect our tastes and harmonize with our character. A Puritan or Quaker in bright colors would be inconsistent—a gay young face in a nun's veil is equally revolting. There are many persons who would be always out of place in a stately sacque, and some who would be lost and spoilt in the crossing bodice with its village grace. It is lawful and necessary to consider, when ordering a dress, what will make it suitable and appropriate, and also what will give the trimmings some artistic significance. A flounce that begins and ends without reason for existence, a meaningless scroll seemingly fallen haphazard on the lap but attached by no apparent means, buttons without button-holes, imitation lacing, etc., are bad in art, and to be eschewed by all who aim at being really well dressed.

There are two general rules to be observed in dress:

1. *That it shall not contradict or falsify the natural lines of the body* —be that body slightly or fully expressed—and perhaps complete concealment is no gain to the moral, as it is a marked loss from the artistic point of view. The Greek saw nothing evil in nature but what coarse minds brought there. The body is so beautiful that it is a pity it can be so little seen; but the morality or immorality, the decency or indecency, consists in the motive of display.

2. *That the attire shall express to a reasonable extent the character of the wearer.* I really do not think that American women ever mean anything at all by adopting one trimming in preference to another, nor that the idea of certain interpretations is one that often occurs to them. They put themselves in the hands of their milliners, believing blindly that these professional advisers have given that thought to their costume which properly can and ought to be given by the wearer only. They think so little about the matter that they do not even guess how much they lose by this indifference. A woman may wear a dress many times without really knowing how the materials and folds mingle on her train. Far better so than that our American women should come to attach the kind of importance to details attributed to French women; but best, were women to bring pure minds to bear with common sense on what they wear, and why they wear it—considering utility as well as ornament.

SIMPLE LAWS TO BE OBSERVED.

In proceeding to lay down a few simple laws about the right and wrong—call it morality if you will—of dress, I notice, firstly, the morality of what we wear, which includes the questions of decency and indecency in dress; secondly, the morality of how we wear it, which is quite another matter, simply affecting ourselves and not the garment; and then there is, thirdly, the independent morality of the fashion in itself.

Firstly. *The morality of what we wear.* Decency in dress is a difficult question, and one too lengthy and involved to discuss fully here. We need only give a few examples, which may suggest more to thinking minds. The human body uncovered is not necessarily a shocking thing. There is nothing wrong or improper in that which is made in God's own image, and which is justly held to be the highest type of beauty in creation.

And at a time when beauty for its own sake was intensely appreciated, when it was cultivated with something of a religious enthusiasm, when a mother longed for her child to be beautiful because beauty was felt to be divine, at such a time, in the fair warm climate of Greece and Italy, it was hardly thought needful to veil the body. The Greeks were proud of their beautiful bodies, as we are of a beautiful face, and a bare leg was no more to them than a bare arm is to us; and the sexes mingled in free and honest companionship, clad only in a thin stola, children being devoid even of that.

But what was harmless in the early Greeks would be impossible in

nations who have lost to a great extent the simple instinct of natural beauty, whilst they have grown abnormally self-conscious and reflective. There are tribes in the East still, of no mean virtue (acting up to their lights), who consider the exposure of the face, or their identity, indelicate, but the rest of the body, wherein everybody is more or less alike, may "go bare, go bare."

The Turkish woman in her loose trouser, perhaps the most modest and sensible of all feminine costumes, is often held up as a type of indelicate dress; but in many respects our own fashions are open to juster criticism, when they seem to admit an impropriety by displaying a part only, just enough to hint at the rest, as though conscious of something wrong. This is far worse than the entire expression of the form, where use and artistic appreciation, or simplicity of mind, have divested it of all exclusively evil associations.

NUDE FIGURES IN SCULPTURE AND PAINTING.

Secondly. *The morality of how we wear a thing*—depending on the wearer's mind. Some women, though covered up to the eyes, always look indelicate; some others, *decolletée* as the dressmaker and a corrupt custom have made them, are in their natural innocence without reproach. We may see this in statues and pictures. It is the mind which makes or mars. Many nude figures in sculpture and painting are inoffensive, because the face, which is the index of the mind, is free from shame or blame, and the whole attitude is sweet and unconscious.

Thirdly. But of the first and second moralities it is not so much our wish to speak here; they must be left to the healthy instincts of pure women, and each will surely enough, by her mode of dress, betray her mind's bent; we can thereby, as it were, compute her orbit. But as to our third point, *the morality of the garment itself* now engages our attention. This may be seen when it is hung on a peg, with no human form inside it. For moral qualities may be applied to the fashioning and adorning of a robe from a purely artistic point of view, as they may be applied to a building. The noble principles of art, which are all founded upon healthy nature, are all "moral"—that is, they tend to exercise a right influence on the mind; they satisfy, soften and do not enervate or harass it. All these principles may be as apparent in a gown as in a cathedral.

Probably nothing that is not useful is in any high sense beautiful. At least it will be almost universally seen, in the matter of dress, that

where an effect is bad, it is an artificial or false effect, and *vice versa*. A trimming, as before remarked, that has no reason for existence is generally ungraceful. A pendent jewel simply sewn to a foundation, where it neither holds up nor clasps together any part of the dress, usually looks superfluous, as it is. Above all, bows (which are literally nothing but strings tied together) stuck about when there is no possibility of their fastening two parts, almost always appear ridiculous; when needed for a mere ornament, a rosette should be used, which pretends to be nothing else.

In the making of dresses, lines ending nowhere, and nohow, are often apparent, and never fail to annoy the eye. The outlines of bonnets are conspicuous instances of this mistake. There is no art instinct, and but little of the picturesque element, in a people who are indifferent to these things, and whose eye does not instinctively demand a meaning and token in everything. In architecture we do not immediately detect and condemn a pillar that, resting on nothing, appears to support a heavy mass of masonry; an arch that is gummed against, not built into a wall, unsupported, and therefore in an impossible position; or a balcony that has neither base nor motive, unsupported and supporting nothing!

NOVEL FORMS OF ATTIRE.

And these things are not seldom seen on the fronts of our more decorative buildings, where the ignorant architect, knowing the whole thing to be a sham, the balconies of plaster, the carvings cement, the lintels fictitious, the pillars hollow, forgets that the forms he borrows were meant for use, and not merely for show. The uncultured dressmaker, only longing for novelty, invents forms of attire that would be impossible were dress less utterly artificial than it is, and this is half the cause of our universal ill-dressing. No fashion or form can leave the mind without a jar, that is not where it is because indispensable there. Whether it occur in a house or in a gown, the principle must be the same.

One of the reasons why peasants, fish-wives, and such folk, look picturesque and beautiful even in their rags, whatever be the mixture of color or arrangement of form—so much more beautiful than fashionable people look even when they try to imitate the fish-wives—is, I think, the motive apparent in everything they wear. The bright kerchief that covers the peasant's shoulders is so much better than a bodice trimmed

in the form of a kerchief. The outer dress that really covers an under dress fully and fairly is so much more satisfactory than one which only pretends to do so, and betrays its own deceit at the elbows, or the wrists, or behind, or in some other unexpected place.

Anything that looks useful and is useless is bad, and the more obviously artificial a thing is, the worse it must always be. A hood that is at once seen to be incapable of going over the head; something that looks like a tunic in one place, yet in another is seen to have no lawful habitation nor a name; a false apron; a festoon that looks as though it had fallen accidentally upon the skirt, when by no possible means except glue or irrelevant pins could it stay there; a veil that you at once perceive is never meant to descend over the face, but is tacked to the top of the head in an exasperating manner; heavy lappets, that instead of being the natural termination of something else, hang meaningless and mutilated; slashes that are sewn upon the sleeve instead of breaking through it; and other things of the same kind—they leave the eye unsatisfied, discontented, often disgusted, as these are artistically immoral.

TOO MANY FLOUNCES AND FURBELOWS.

Indeed, the truth is, we have far too many subdivisions of attire about us to manage them properly. If we had but half the flounces and furbelows, and upper and under and middle skirts, and aprons and sashes, and "coat-tails" and festoons, we should just have half the difficulty in combining and arranging effects. It is easier to drive two horses than six, as poor Phaeton could have told us when he upset the chariot of the sun. He was an ignorant driver, and so too often is a woman in the matter of dress. We ought never to admit an addition to our unmanageable team, without due reason.

We might dispense with half our complicated folds, our whalebones, our scrunched toes, our immovable arms, and many other miseries, and look less like mere blocks for showing off clothes, and more like human beings; but we can't bear to let the housemaid or street beggar think we have got a nickel in our pockets when it can be hung or piled on our backs, and we go about loaded like the celebrated camel who finally collapsed under a straw.

Let us have no burlesque parodies of classic simplicity, yet let us curb our insatiable passion for sticking everything we can procure, feathers and flounces, beads, birds'-nests, tabs, tinsel, and tails all over

us, anywhere, like wild Indians or the Terebella. Alas! how like we are to the Terebella! Perhaps you ask what *is* the Terebella?

The Terebella is a little creature that lives in the sea, to whose tender body nature has allotted no protective covering, and which cleverly sets itself to supply the want with a taste about as fastidious as that shown by our own fair countrywomen. It collects materials for its little coat with the same rapacity, and often with as little judgment—for some of its most ambitious ornaments being more costly than it can afford, have actually led to its own destruction.

Nothing comes amiss to it. Sand, shells, pieces of straw, sticks or stones, atoms of sea-weed, every kind of *debris* within its reach, good, bad, or indifferent, it will collect and stick upon itself, agglutinated together by a secretion that among marine animals takes the place of needle and thread. It has even been known to add a heavy chignon pebble to its load, more inconvenient than serviceable, after quite a human fashion! When its laborious coat is finished, it thrusts out its triumphant head and rejoices. This little creature is one of the annelids, and the pretty name of Terebella, though belonging to the sea, would not always be out of place on shore.

WHAT IS BECOMING TO DIFFERENT PERSONS.

As for dresses suitable to certain persons, I need say but little. There are many books on the etiquette of dress, showing what is proper to be worn in the morning and in the evening and at noonday. A few simple hints will suffice here. Those who are very stout should wear nothing but black; those who are very thin should put a little padding in their gowns; and neither should be in the least *décolletée*. Perpendicular stripes in dresses give height, and increase fulness, and are therefore particularly suited to very slight, small people, and particularly unfitted for stout figures.

To fair persons blue is becoming—but not every blue. Dark blue, or too brilliant a blue, is extremely unbecoming to that kind of complexion, and makes the skin yellow and the hair sandy. It is the old, pale, dull blue that really changes sand to gold. Pink, especially the old-fashioned yellow-pink, is, when not too brilliant, becoming to all complexions, except that which goes with red hair. Light green may be safely worn by the very dark, the very rosy, and by the very pale when the skin is extremely clear; but to ordinary faces it is a trying color,

though there are people who look well in nothing else. Green, mixed properly with pale blue, is very becoming indeed.

Grey is the most beautiful color for old and young—I mean the soft silver grey which is formed by equal parts of black and white, with no touch of mauve in it. It admits of any color in trimming, and throws up the bloom of the skin. Rose-color, for some people, is pretty, and not unbecoming. White, so disastrous to rooms, is generally becoming in dress—only very coarse complexions are spoilt by it.

Short women should never wear double skirts or tunics—they decrease the height so much; unless, indeed, the tunic is very short, and the skirt very long. So also do large, sprawling patterns used for trimmings; let these be left to women tall enough to carry them off. Neither let a very little woman wear her hair half down her back; let her lift it clean up as high as possible.

Large feet should never be cased in kid—least of all, white kid slippers—for kid reveals so clearly the form and movements of the feet, and stretches so easily, that few feet have a chance in them. Black stockings and shoes, even for evening wear, are the most appropriate choice.

EVILS OF EXTRAVAGANCE.

Although I have been dealing with the moralities of dress, I have not said a word about extravagance. That is a most important subject, no doubt, and one which everybody is bound to settle for himself. But the whole morality of luxury is quite a separate branch, and must be separately discussed.

Ladies are accused of spending too much on their dress: my point is, that whether they spend little or much, they may lay their money out on right—or wrong—artistic principles. A woman who understands and knows how to apply a few general principles, such as I have tried to point out, may often spend half as much as her friend who gives herself over to the dressmaker and empties her purse by exhausting the last fashion book. We are told again that ladies think too much about dress: I should say they think too little, or rather they don't think at all. If they thought a little more about dress, they would waste less time, and probably spend less money; but the result would be grace, harmony, and expressiveness, instead of those astonishing combinations which rob the fairest women of half their charms, and expose ruthlessly the weak points of their less favored sisters.

We are most anxious that women should devote, not less time, less money, to the art of self-adornment, but even more, if the results are proportionately better. We are anxious that a pretty girl should make the very utmost of herself, and not lose one day of looking beautiful by dressing badly while her fresh youth lasts. We are desirous that when the first freshness is past, advancing age should not grow slovenly as it is apt to do, but that then the art which once enhanced beauty should conceal its fading away: we want every woman to be at all times a picture, an example, with no "bar" between herself and her surroundings, as there should be none between her character and its outward reflection—dress.

For this reason, Nature must not be destroyed, but supported; her beauties revealed, not stifled; her weakness veiled, not exposed; her defects tenderly remedied; and no fashion should be tolerated which simply tends to burlesque her. As, in spite of Quakers and philosophers, women are likely to spend money and time over their dress to the end of the chapter, the sternest censor may well join in the hope that not the girl of the period, but the woman of the future, will produce greater results, waste less time, whilst bestowing more thought upon the beauty and the propriety of her dress.

WOMAN'S HAIR
HER CHIEF ORNAMENT.

CHAPTER XXXI.

IN all ages of the world and among all nations, the hair has been regarded as one of the chief adornments of the person of the human family, while its healthy preservation and orderly arrangement have occupied much of the attention of the more cultivated and refined in every land. The hair is certainly one of the most important elements of that ensemble which constitutes the human being. Hence it is to the universal admission of this fact, that ingenuity has been put to the rack in every clime, with the view of discovering remedies capable of increasing, or of even creating the constituent characters of a fine head of hair, and also of ameliorating the defects of nature and of age. Notwithstanding all this, however, it is a matter of no little astonishment that comparatively so few artists of modern times have exercised their talents so as to demonstrate the advantage of taste, or taught a knowledge of the subject of arranging a lady's hair in a becoming and symmetrical manner.

As an American writer of considerable celebrity has well remarked, "There might be a hundred studies of the various modifications of style, with an analysis of the meaning and expression of each one—the merry and the melancholy, the dignified and the playful, the firm and the yielding, the proud and the timid, the sainted and the coquettish, the practical and the poetical—each finding a picture of her own peculiar style, and guarded against stumbling ignorantly and unconsciously upon one which is entirely out of harmony with her character. It is a neglected chapter of the arts. We admire woman too much to think that the propriety and fitness of beauty in the dressing of her head is a trifling matter. Science and art might well combine to give it

some comprehensive system and redeem it from the present barbarous haphazard."

This is the right view to take of the matter, especially at a time like the present when the principles of art are so much regarded, and when their influence on dress and personal decoration are so manifest in the highest quarters of refined and enlightened society.

GOVERNED BY FACIAL OUTLINES.

We therefore believe that it is not out of place in a volume of the present character, to add our efforts to extend their use by practical illustration, so that there may be no excuse hereafter for the monstrous mistakes which have been made by many ladies on this subject, through an ignorance of the right mode of adapting the hair to the peculiarities of facial outlines so as to enable every one to render herself the

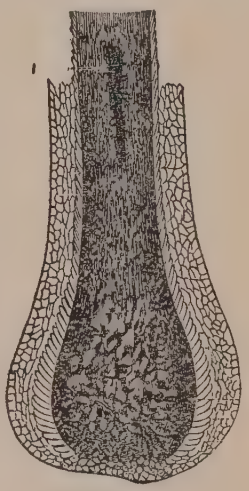
——"admired of all beholders,"

instead of repelling homage by a reckless and repeated outrage of the golden rules of propriety and good taste. My purpose, in the present chapter, accordingly is to treat of the structure of the hair, and to present the best means for its preservation, improvement and adornment, in connection with the various styles in which it is worn and decorated in all parts of the world. Until of late years a great paucity of materials has existed in respect to this subject. Of all the tissues of the human body the hair has claimed the least attention among scientific writers, while among the more popular authors it has remained a theme almost contemptuously ignored, notwithstanding the personal appearance is dependent on healthy vigor, and the great care bestowed on its culture and arrangement in all countries.

It is true, the poets have sung the praises of the flowing hair through all times, perhaps, yet it has not been till the last century that any really valuable scientific work has appeared, treating of it in a physiological and popular manner. Pope was perhaps the first author who elevated the theme to the dignity of letter-press consideration. His poem, "Rape of the Lock," has received a world-wide fame, and brought into the field numerous writers among the medical profession, who have not only presented elaborate scientific essays, and many curious facts on the subject of the human hair, but extended their researches as to its historical characteristics, as a means of personal adornment among all the nations on the face of the globe.

It is perhaps needless to say that I have availed myself of all materials of information, and that I expect to be pardoned for addressing myself to the task and giving to the world the collected result of my researches and experience in a matter of really very great importance to all classes of society, especially to the *belle sexe*. Besides showing the constitutional functions of the hair, and the best means of preserving it in a healthy condition, we shall show how to arrange the hair, and offer those golden rules which will serve to rectify all mistakes in respect to its use as a facial adornment.

The whole body, except the palms of the hands and soles of the feet, is covered with hair, of a soft and downy character. The hair of the head is long and strong; sometimes it is of remarkable strength; while it embraces every variety of color, as shades between the two primary ones of red and black. Hair consists of a shaft, covered or enveloped by a distinct structure, called the corticle substance, and may be compared to the outer bark of a tree.



REPRESENTATION OF A HAIR HIGHLY MAGNIFIED.

ROOT OF HAIR.—The root of hair is first developed. It consists of two parts, sheath and bulb. The bulb is two or three times the diameter of the hair, and consists of granular cells. The cells form at the bottom of this follicle and gradually enlarge as they mount in the soft bulb, which owes its enlargement to the increase in the size of the cells. The color of the hair is also developed in the bulb, which is diffused with the hair cells, giving it color. In grey hair there is no coloring matter.

The cells of the bulb as they ascend become elongated and narrowed, which considerably diminishes the diameter of the shaft above the skin. These cells are so arranged together as to form the fibres of which the shaft consists. The corticle substance of the hair consists of cells arranged like the tiles upon a house, and they extend the whole length of the shaft. The hair follicle is lined by a reflection of the epidermis or outer covering of the skin, which dips down, forming an envelop for the bulb of the hair.

SHAFT.—The shaft is usually divided into the corticle, medullary, and fibrous portions. The corticle, as before remarked, consists of a layer of cells like the tiles upon the roof of a house. The fibrous portion consists of the aggregation of cells as they are formed in the

bulb. It is colored with pigment, in young and healthy hairs. The medullary canal will be found in the centre of the hair, as is generally filled with coloring matter. In old and gray hairs the canal is nearly empty.

GROWTH OF HAIR.—The growth of all hairs takes place at the root, which is largely supplied with blood-vessels. These vessels supply material for the cells of which the hairs are formed, and as the cells form they push the older ones up. In this way, additions are constantly being made to each hair. Hair is peculiarly susceptible of being affected by the conditions of the health. If the system be debilitated from any cause, the hairs will either fall off spontaneously or by degrees. It is only the bulb that comes away and not the sheath and germ, and hence may be regenerated. When the sheath and germ has been destroyed, hair cannot be replaced.

VARIETIES OF COLOR.

The color of the hair is a point of considerable interest in its physiology. It was once believed that the coloring matter or fluid circulated in the centre of the hair, but this idea has been completely exploded by the researches of modern microscopists. According to Bienvenu there are really but three colors of hair—black, red and white—all the other varieties being only so many different shades of the same.

According to Cazenave and Grellier, there are but two principle types of hair—red and black, which belong the intermediate or decreasing shades, brown, chestnut, fair. Cazenave believes that white hair is the result of absence of coloring matter, as in the Albino, or of discoloration of the hair consequent of certain diseases. Grellier proves that the color of the hair varies according to climate. The nearer the north the fairer the hair of the inhabitants.

The brightness of the beautiful golden hair is attributable to the excess of sulphur and oxygen, with a deficiency of carbon. The coloring tint or pigment forms but one portion of the difference between the soft luxuriant tresses of the Saxon girl, and the coarse blue black locks of the North American squaw.

According to Hassell the depth of the color of the hair depends upon the development of pigmatory matter in other parts of the system, as in the eye and beneath the skin. The coloring of the lighter hairs, as the red and flaxen, depend less upon the depth of coloring of the pigment cells and granules than upon the presence of minute globules of a

colored oil. In the hair of Albinos, very little coloring matter is present; in gray hair the color matter has deserted the pigment cells and granules.

The constituents of different colored hair, we thus see, are by no means the same. All hair contains a certain portion of oily matter, some common salt, some phosphate of lime, a considerable portion of sulphur, various gases, and some manganese and iron. Fair hair contains least carbon and hydrogen; brown hair the most carbon and the smallest quantity of oxygen; red hair has the largest proportion of sulphur; grey hair the most phosphate of lime. All contain an equal amount of nitrogen.

The color of the hair corresponds with that of the skin—being dark or black with a dark complexion, and red or yellow with a fair skin. When a white skin is seen in conjunction with black hair, as among the women of Syria and Barbary, the apparent exception arises from protection from the sun's rays, and opposite colors are often found among people of one prevailing feature. Thus red-haired Jews are not uncommon, though the nation in general have dark complexion and hair.

MORAL ASPECTS OF THE CASE.

Some writers suppose that there exists a certain relationship between the color of the hair and the moral temperaments. Thus the rapidity of circulation, love of change, vivacity of the imagination, and all other attributes of the sanguineous temperament, are associated with chestnut-colored hair. Black hair indicates athletic strength and vigor, energy and ambition, and the passions. Fair hair represents a soft and lax fibre, and is the emblem of mildness, tenderness and affection, blended with judgment; in short, all the qualities usually associated with a calm and mild temperament.

According to Lavater, the hair affords a variety of indications of the temperament of an individual, of his powers, of his habit of thought, and consequently of his intellectual faculties. It corresponds with our physical constitution, as plants and fruits do to the soil which produced them. The diversity of the covering of the lower animals sufficiently indicates the expressive meaning conveyed by the different qualities and color of the human hair. Compare the wool of the sheep with the fur of the wolf, the hair of the rabbit with that of the hyena.

The fair-haired inhabitants of the earth are found north of the parallel of 48°; this line cutting off England, Belgium, the whole of North Germany and a great portion of Russia. Between the parallels of 48°

and 45°, which includes northern France, Switzerland, and part of Piedmont, passes through Bohemia and Austria proper, and touches the Georgian and Caucasian provinces of the Czar empire, dark brown hair is the predominant color. Below this line—Spain, Naples and Turkey—are found the genuine dark-haired races.

Taking Europe broadly from north to south, its people present all gradations in the color of the hair: the light flaxen of the colder latitudes deepening by imperceptible degrees into the blue-black of the Mediterranean shores. The exceptions to this gradation are the dark tribes still lingering in England, the Celtic majority of the Irish; while even the modern Normans are included among the black-haired. On the contrary, Venice, which is in a southern latitude, has always been famed for the golden beauty of the hair of the people, beloved so of Titian and his school.

It would seem that race determines the color of the hair. Taking the parallel of 51° north and following it as it runs like a necklace around the world, we find a dozen nations threaded upon it, like so many parti-colored boards.

SAMSON'S FLOWING LOCKS.

The European portion of the necklace is light-haired; whereas the Tartars, Northern Mongols, and aboriginal American Indians have straight black hair. Canada breaks the chain once more with the blonde tresses of the Saxon.

Partial excess of hair, or the growth of hair, in usual parts is very common. The Biblical story of Samson, whose flowing locks were shorn by Delilah, is a striking instance of the kind. Such exuberance of hair is usually indicative of great physical vigor and strength in the male, but considered a misfortune in women. Many females have whiskers and beards; such are usually sterile.

A Mexican woman was exhibited in the United States, under the style of the "Bear Woman." Her face and head resembled those of a bear, and she was covered all over with long black hair, resembling that animal. It was supposed that she was the result of an unnatural connection of a bear with an Indian woman. This is scarcely credible, and barely possible, among the freaks of Nature.

A bearded woman was exhibited at Barnum's Museum, in New York. Her whiskers and moustaches were full and symmetrical as ever seen on

a modern dandy or "lady's man." She was married and the mother of several children.

A bearded woman was taken by the Prussians, at the battle of Pultowa, and presented to the Czar, Peter I., in 1724. Her beard measured a yard and a half in length. Madame Fortunne, a native of Geneva, exhibited in London, had a beard of enormous length. She was married, aged twenty-five, and the mother of a young child. This case is mentioned in the "London Lancet." Numerous other instances of bearded females are on record.

The famous General Haynan, of Austria, whom the brewers of London mobbed, for his tyrannical propensities, and cruel treatment of Hungarian women especially, had a moustache half a yard long! Still greater was the beard of the carpenter depicted in the Prince's Court at Eidam, who, because it was nine feet long, was obliged, when at work, to sling it about him in a bag.

HAIR CHARGED WITH ELECTRICITY.

Hair is highly susceptible of electricity. Most persons have seen the sparkles and listened to and felt the tiny shocks elicited from the hair of a cat by friction, and many have doubtless, while brushing their hair, observed the peculiar manner in which, under certain states of the atmosphere, and especially in frosty weather, each individual hair will fly apart and avoid the contact of its neighbor. This will also occur in certain states of the body, and in persons of nervous and sensitive temperament.

Another peculiarity of hair is its hygrometric demonstrations, the curious way in which it will uncurl and lengthen itself under the influence of damp or moisture, contracting again gradually as the atmosphere becomes dryer. This has been ascribed to the animal portions of it, which, having in their composition saline particles, attract the moisture in the atmosphere, and, by absorbing it, distend the body of the hair.

The hair of a man's head is finer, generally, than that on the head of a woman; but, if left uncut, it will not grow to the same length. A woman's back hair is an appurtenance entirely and naturally feminine. The hair upon the scalp, so far as it concerns its mechanical use, is no doubt the most important of the hair-crops grown upon the body. It preserves the brain from all extremes of temperature, retains the warmth of the body, and transmits very slowly any impression from without.

The character of the hair depends very much upon the degree of

protection needed by its possessor. The same hair, whether of head or beard, that is in Europe and America straight, smooth and soft, becomes crisp and curly in hot climates, and will become smooth again after a return to cooler latitudes.

According to Erasmus Wilson, the hair of women is coarser than that of men. It is not established that hair cut short tends to render it coarser and stronger. Flaxen and chestnut hair are the finest, and white and black hair the coarsest. Withof confirms these views. He adds that five hundred and ninety-eight black, six hundred and eighty-four chestnut, and seven hundred and twenty-eight flaxen hairs are about the average number produced on a square inch of the skin of the head. In some people the hair has a natural "disposition" to curl. In some it is very crispy; in others stiff, straight and spering, while in another class the least moisture will cause it to hang in what children not inaptly call "rat tails."

HAIR DISTRIBUTED OVER THE BODY.

The distribution, concentration and location of the hair are deserving of some attention. While in most quadrupeds the whole of the body is covered with long hair, in the human race only a small portion has much that is visible to the naked eye. In main, the hair on the limbs varies considerably in length; in some being merely pubescent, while in others it is nearly an inch long, giving to the limbs a hairy aspect. It is always met with on the back of the hand and foot, but never on the sole or palm, a circumstance of great importance to the delicacy of the touch.

No animal in creation experiences from his mane such inconvenience as man would do from the hair of his head if obliged to walk on all fours —an evident proof that he was intended by his Creator to maintain an erect position. The hair supplies a sort of pad to the head, by which it is protected from mechanical injury, and guarded from the inclemencies of the weather.

The growth of the hair is limited. It grows longest in the female, waving over the neck and shoulders, screening and protecting them from injuries which might be sustained by free exposure to air, light, etc. In the softer sex it usually reaches to the waist. Sometimes its length is very great. Sir Charles Bell mentions a woman who had hair six feet long. Tennyson thus speaks of the Lady Godiva:

"Anon she shook her head
And showered the rippled ringlets to her knee."

In man the hairs are tubular, the tubes being intersected by partitions, resembling in some degrees the cellular tissue of plants. Their hollowness prevents incumbrance from weight, while their power of resistance is increased by having their transverse sections rounded in form.

According to Youatt, hair, although sometimes covered with scales or rugosities, has no serrations or tooth-like projections. The difference between wool and hair is that hair is imbricated or scaly, while wool is toothed or serrated. Bichat also asserts that hair is of an imbricated or bristled texture. The projections all point in one direction from the root to the tip, analogous to the feathered part of a quill.

The various uses and economical purposes of the hair are not clearly understood. There is little doubt however, that, like the pubescence and leaves of plants, the hair performs some useful operations for the skin in absorption and ventilation. The leaves of plants and trees, we know, are mainly instrumental in absorbing the noxious carbonic acid gas of the atmosphere, and, after retaining the carbon, gives out the oxygen purified. Plants which are divested of their leaves are invariably weakened in their growth or destroyed.

SPECIAL PURPOSES SERVED.

So, a deprivation of the human hair is usually found to weaken and enervate the frame. The history of Sampson proves that strength lies in the luxuriance, vigorous growth, and proper functions of the hair. Of special purposes fulfilled by hairs, we have instances in the eyebrows and eyelids, which are beautifully adapted for the defences of the organs of vision; in the small hairs which grow in the apertures of the nostrils, and serve as guardians to delicate membranes of the nose; and in similar hairs in the ear tubes which defend their cavities from the intrusion of insects. They perform, also, the office of an apparatus of touch. We feel distinctly the disturbance of the hairs of the head by the movements of a fly, although the little animal is at some distance from the skin.

When hair is boiled in water, a portion of it is dissolved, which on cooling, possesses the character of gelatine. The portion that is insoluble has the properties of coagulated albumen.

It is ascertained that a full head of hair, beard and whiskers, are a prevention against colds and consumptions. Occasionally, however, it is found necessary to remove the hair from the head, in cases of fever or

disease, to stay the inflammatory symptoms, and to relieve the brain. The head should invariably be kept cool. Close night-caps are unhealthy, and smoking-caps and coverings for the head within doors are alike detrimental to the free growth of the hair, weakening it, and causing it to fall out.

Long hair is considered a special adornment of woman. The beautiful features and personal attractions of the fair sex are always enhanced by this ornament. Whether the auburn tresses fall in graceful folds, the rich and glossy curls are bound with roses, or

"The long dark hair
Floats upon the forehead in loose waves unbraided,"

either style will equally serve to set off the ensemble of female loveliness.

The pillar of the Ionic order is constructed upon the model of a beautiful woman, with soft, flowing hair—

"Her ringlets unconfined,
About her neck and breast luxuriant play."

The elegance and ingenuity displayed in this architectural pillar is in strong contrast with the Doric, which is formed after the model of a strong, robust man.

The Goddess of beauty, without this elegant ornament of hair, though she had the brightest eyes, the fairest complexion and the most fascinating charms, would appear hideous and deformed. Homer speaks of the fair one who set all Asia in arms as the "beautiful haired Helen." Apuleius maintains that no bald Venus could ever please even swarthy Vulcan. Petronius describes the tresses of Circe, the enchantress, as "falling negligently over her beautiful shoulders." Apuleius, also, praises her trailing locks, thick and long, insensibly curling, disposed over her divine neck, softly undulating with carelessness—

"Whose golden hair
Around her sunny face in clusters hung."

Ovid speaks of those beauties who plaited their golden hair like spiral shells. Amasia is described with long flowing hair, distilling the perfume of myrrh and roses, and that of Venus as diffusing around the divine odors of ambrosia. Coleridge speaks of

"Mirth of the loosely flowing hair."

While the bards of Hellas boast of a Hypsipyle, that gorgeous beauty, whose hair fell flowingly to her feet.

These, and a thousand other examples, show that in all ages and among all people, flowing hair was considered an essential element of female beauty.

We repeat to women, long hair is an ornament, and adorning. It is an instinctive prompting of nature that woman should allow her hair to grow long. It gives her a sort of natural covering, and indicates the propriety of her wearing a veil. It answered the purposes of a veil when it was suffered to grow long, and to spread over the shoulders and over parts of the face before the arts of dress were invented or needed. We have already intimated that the hair of woman actually grows longer than that of man, which fact proves that flowing tresses are intended for some especial purpose in the economy of nature.

Milton, in his "Paradise Lost," book IV, gives a description of the hair of Mother Eve:—

> "As a veil, down to the slender waist,
> Her unadorned golden tresses fell
> Dishevell'd, but in wanton ringlets waved."

The poets and writers of ancient times, whatever their predilection in regard to the color of the hair, are unanimous in their admiration of luxuriant and flowing locks in woman.

The predilection for certain colors of the hair differ in various countries. In the East black hair has ever been held in the highest estimation. The most polished ancient nations were passionately fond of red hair. The Turks are fond of women with red hair. The inhabitants of Tripoli give their hair a red tinge by the aid of vermillion. The women of Scinde and the Deccan dye their hair yellow and red, as the Romans did, in imitation of German hair. In Spain red hair is admired almost to adoration. Lately an English naval commander, who luxuriated in fiery locks, while in that country was greatly caressed in consequence by the Spanish women and looked upon as a perfect Adonis.

In China a red-haired person is termed "Hung Maow Kwei," literally red-haired devil. Red is beautiful to the Chinese. They extol the peach flower because of its form and delicate red color; all the fronts of their houses are red; they use the vermillion pencil. The word "Kwei" is a general term for spirits, whether good or evil, and equivalent to our word spirits. Thus, "red-haired devil," instead of having an offensive signification, becomes "beautiful spirit." The Brazilians regard light hair and ruddy complexion as enviable marks of nobility.

The Germans were in the habit of using a kind of soap of goat's tallow and beechwood ashes, to stain their hair red or yellow. The Roman ladies used to disguise their hair by wearing wigs composed of the hair of Germans.* The peruke-makers of Rome, according to Ovid, bought up all the spoils of German heads to gratify those of his countrymen, who were determined to conceal their fine black hair under a wig of light or flame color. Hair from Germany was sold at Rome for its weight in gold. Red hair has been almost universally given to warriors and golden tresses to ladies. In heathen mythology, the golden locks of Apollo, the red hair and beard of Mars, the yellow tresses of Venus, and the flaxen braids that were twisted under the helmet of Minerva, demonstrate how much this color was appreciated by the ancients.

Sir Walter Scott, is his description of King James in "Marmion," says:

"Auburn of the darkest dye,
His short curled beard and hair."

It is a favorite subject of description with our amatory writers;—

——"Her soft, unbraided hair,
Gleaming like sunlight upon snow, above her forehead fair."

Another invites us to contemplate a picture—

———"Where
Streamed its long tresses of golden hair,
Like straggling sunbeams of softest glow
Tinging the splendor of stainless snow."

Modern poets seem to be very partial to golden hair. Milton speaks of it in a variety of places; "Usa, golden-haired," and, "Hecærge, with the golden hair." In his drama of "Adam" he thus apostrophizes:—

"From that soft mass of gold that curls around it
Locks like the solar rays!
Chains to my heart, and lightning to my eyes,
O let thy lovely tresses,
Now light and unconfined,
Sport in the air, and all thy face disclose."

In another place—

"Her breast
Met his, under the flowing gold
Of her loose tresses hid."

Petrarch again—

"Loose to the wind her golden tresses streamed."

The royal poet, James the First of Scotland, writes of his lady's "golden hair."

Sir Walter Scott thus describes Clara in Marmion:—

"Now her bright locks with sunny glow
Again adorned her brow of snow."
"And down her shoulders graceful rolled
Her locks profuse of paly gold."

In the Lay of the Last Minstrel:—

"All loose her golden hair."

And speaking of Margaret, he says:—

"Her blue eyes shaded by her locks of gold!
Her skin was fair, her ringlets gold."

Shakespeare seems to have delighted in golden hair:—

"Her sunny locks hung on her temples like the golden fleece."

Bassanio, in the "Merchant of Venice," beholding Portia's portrait, enraptured, exclaims:—

"Here in her hair
The painter plays the spider, and has woven
A golden mesh to entrap the hearts of man
Faster than gnats in cobwebs."

In the "Two Gentlemen of Verona," Julia says of Sylvia and herself:—

"Her hair is auburn—mine is perfect yellow."

Other passages will suggest themselves to every reader. Shakespeare mentions black hair only twice throughout all his plays, showing that he considered light to be the peculiar attribute of soft and delicate women.

The old poets had a similar partiality for the color touched with the sun. Old Homer sings of this kind of hair. An ancient song has it—

"Still for glyttering looks and gaze
Thou wilt ever cite the sonne;
Here's a simple tress—I praye,
Hath he such a golden one?"

Numerous other extracts might be quoted showing partiality for this color, but we need cite only a few more:

"And parted hair, of a pale, pale gold,
That is priceless every curl."

"'Tis sweet to part the sunny hair,
And look upon the brow of those we love."

"The breath of heaven came from the summer bowers
And stirred upon her cheek the golden curl
That floated there as if it loved to kiss
Its alabaster beauty."

The old painters had the same fondness for golden tresses. In the English "National Gallery," the highest ideal of female beauty, from Corregio down to Rubens, are represented with golden or flaxen hair. There is not a single black-haired female head among them. It is to the fineness and multiplicity of hairs that blonde tresses owe the rich and silk-like character of their flow. In the days of the elder Palma and Giorgione yellow hair was the fashion, and the paler the tint the more admired. The women had a method of discharging the natural color by first washing their tresses with some chemical preparation, and then exposing them to the sun. In some districts of Africa, they prefer light hair. The Gauls, the ancestors of the modern French, had the same preference, though that color is now in disrepute with their descendants who like black hair.

Red hair is often considered a deformity, but why it is hard to say, since in all cases the hair and complexion suit each other admirably. The "golden locks" and "sunny tresses" of the poets, invariably accompanied the blonde, frank and manly faces inherited from Saxon ancestors. "Villainous red hair," "horrid red whiskers," are terms of contempt and ridicule; but hair is only "villainous" and "horrible" when dirty and improperly worn.

The prevailing sentiment in modern times seems, however, to be in favor of dark or black hair. In the East black hair is held in the highest distinction. The Persians especially cannot tolerate any other color. The Song of Solomon says: "His locks are bushy, or curled, and black as a raven." Black hair characterized the prophetic virgins of the Druids. The women of Caraccas, Venezuela, are seldom blondes; but with hair of the blackness of jet, they have the skin white as alabaster.

Jet black eyes and raven tresses have their admirers in all countries. Ainsworth, in his "Thirty Requisites of Perfection," enumerates three black: "Dark eyes, darksome tresses, and darkly-fringed lids. What can be more seducing than jet black hair, falling in undulating ringlets upon the bosom of a youthful beauty!"

Some people prefer brown:

"She has ringlets richly brown,
Lovelier than a jeweled crown."

The Zinder ladies of Central Africa color their hair with macerate indigo. They also color their flesh with this dye, the dark blue replacing the yellow ochre of the ladies of fashion in Aheer. The eyebrows are usually of a darker shade than the hair, which serves to give a tone of character to the forehead.

"Black brown, they say,
Become some women best, so that there be not
Too much hair there; but in a semicircle,
Or half moon, made with a pen."—*Winter's Tale.*

The ancient Romans considered it indispensable for a beauty to have her eyebrows meet, and in Scotland, persons whose eyebrows are so formed are considered lucky. In the East, a powder composed of antimony and bismuth is used to darken the eyelashes. In Circassia, Georgia, Persia, and India, the growth of children's eyelashes is promoted by tipping and removing the fine gossamer-like points with a pair of scissors when they are asleep. By repeating this every month or six weeks, they become, in time, long, close, finely curved and of a silky gloss. The practice never fails to produce the desired effect, and it is particularly useful when, owing to inflammation of the eyes, the lashes have been thinned or stunted. Byron in his "Bride of Abydos," alludes to the beauty of long eye-lashes in the following exquisite lines:

"As a stream late concealed
By the fringe of its willows,
Now rushes revealed
In the light of its billows:

"As the bolt bursts on high
From the black cloud that bound it—
Flashed the soul of that eye,
From the long lashes round it."

Another poet says:

"Half-drooping lids, deep-fringed, they shade
The large blue orbs that shine below:
Bright eyes! by their own lashes weighed,
Still, still they languish to and fro."

The Japanese have a tradition that tea sprang from the eye-lashes of their pagan saints. This fable, like that of the alleged discovery of coffee by goats browsing on the leaves and becoming frisky, and monks thence testing their properties, took its rise, probably, from its effect in promoting wakefulness.

STYLES OF WEARING THE HAIR

CHAPTER XXXII.

CERTAIN modes of wearing the hair have distinguished particular nations. The Armenians and other Asiatics twisted it in the form of a mitre. The Parthians and Persians kept it long, floating and curled. It was thick and bristly with the Scythians and Goths. The Arabians, Abantes, etc., had it cut upon the crown of the head, while the Athenian Bacchantes kept it floating only. Girls wore it fastened upon the top of the head, and matrons had it tied and fastened upon the nape of the neck. To "remain in the hair," signified unmarried girls, who wore their hair long and not twisted into knots like that of married women.

At a mediæval period the modes of arranging the hair were very varied. It was lost beneath the hat in the time of Henry VIII. It was a cloud upon the head in the reign of George III. During the same period in France, it was curled on the temples and collected behind in distinct tresses by means of clasps. Margaret of Navarre frizzed her hair on the temples, and turned it wholly back in front. Puffing the hair and using white and yellow powder extravagantly were adopted. The head-dresses were built or plastered up once a month, and sometimes at longer intervals; so that, it is stated, on one occasion, a family of young mice was discovered on taking down the hair. Some flat bottles, containing water, were introduced into this pyramid to receive and give a freshness to the stems of the flowers with which it was adorned.

The Spaniards parted their hair at the side, and so destroyed all balance of outline. Sometimes the coiffure resembled a mushroom. The Greeks wore their hair in a simple and elegant manner. It was divided on the crown of the head, turned at the temples, falling gracefully in

loose ringlets on the neck and shoulders. If these were turned up, they were fastened with a single ornament, such as a golden stylus or pen.

The ancient Greeks, at various periods, wore quantities of false hair, plaited their tresses into elaborate braids, curled them in a pyramid of curls, frizzled and pomatumed them, and it was only now and then that the classic head-dress we term Grecian predominated.

The ancient Roman ladies made hair-dressing an absolute science, taught their slaves how to rear the hair into marvelous edifices of curls or frize, with flowers, jewels and coronals; or to plait it into multitudinous plaits, which were enclosed in a silken caul, or a net woven of gold and silver thread and gems, or fastened with large pins, arrows, or even dagger-shaped jewels of gold, silver, or metal.

TRESSES PERFUMED AND POMADED.

The Egyptians perfumed and pomaded their tresses, and suffered them to float in braids or plaits about their necks and down their backs, enwreathed with flowers, or gems, or bands, and confined by a fillet round the head. They, too, wore false hair, both with their own and in wigs.

There is in the British Museum a wig said to have been found among the ruins of the temple of Isis, at ancient Thebes; and although so many centuries have elapsed since it was fabricated, the hair retains its extraordinary hue, the curls their form, and the whole thing its shape and form, affording a proof that the hair-dressers of those days possessed a secret ours have not,—that of preserving the curl of hair. If we may judge, however, from the few authentic descriptions and specimens of their art which have come down to us, we should say that they were by no means like ours, ambitious of emulating and imitating nature, for they seem to have painted, frosted, gilded, silvered, and stiffened the hair until its actual identity was lost or destroyed.

In the early times in England, the style in which women wore their hair was very plain. It was dressed very simply, being parted in the middle, put back off the face, and then wound up under the hood or coif, or cap, or suffered to float at length in curls down the back.

Elizabeth, Queen of Henry VII., wore her hair thus on the day of her marriage, with a "calle of pipes over it." One portrait of Anne Boleyn represents her in a similar manner. Jane Gray is pictured with her hair parted in the middle and braided over the forehead, while the back hair is concealed beneath a veil or cap; indeed, it was not until the

reign of Elizabeth that we begin to perceive those elaborate headgears which a century later became so ridiculous in size and height. We find this "goode Queen" delighting in marvelous structures of curls, frize, gems and gold; in some portraits her hair appears to be folded over a cushion—we say "her hair," but history strangely belies her if the false portion did not far exceed that supplied by nature; and, indeed, if she had not several entire wigs.

About 1630 the hair began to be worn in a sort of crop, curled in short, fine curls over the forehead, and falling in ringlets on the neck—*a la* Henrietta Maria, Queen of Charles I. In the reign of Charles II perukes were very much worn. It was then the fashion for ladies to match or contrast their complexions and dresses with wigs of divers hues. Perukes came into fashion in England in the latter end of Queen Elizabeth's reign. The making of them furnished employment for decayed gentlewomen. So much was hair worn at that period, that false hair became high in price, while it was scarcely possible to obtain the requisite quantity by any means. Poor women were bribed with large gifts to part with their natural tresses; children were enticed into lonely places and robbed of theirs, while even the dead in their graves were despoiled.

ANCIENT MODE OF DYING THE HAIR.

The custom of dyeing the hair was also then very prevalent. Stubbs says: "If any have haire of her owne naturall growing, which is not fine ynough, then they will die it in divers colors." In short, it was about this time that Art began to assume the rule over nature. France was the originator of the changes of the fashion in wearing hair, as she is the inventor of new styles at the present day. Perukes were an importation from that country. Stowe says that they were introduced in England about the time of the massacre of Paris.

Randal Holmes, speaking of the costumes and coiffures in 1690, mentions this peculiarity: "The ladies wore false locks set on wires to make them stand out a distance from the head." In the beginning of the next century, 1700, the hair was suffered to grow very long, and either curled or allowed to float over the neck in a multitude of wavy ringlets, interspersed with ribbons and jewelry, or built up into an edifice of curls and frize, and surmounted with feathers, or gauze and flowers, or ribbons.

Fifty years later, the absurd fashion of putting a cushion on the head,

and combing the hair smoothly over it, prevailed. Some of these cushions were of a ridiculous height. Sometimes the extreme ugliness and stiffness of this coiffure was occasionally softened by a few thick curls being suffered to wander over the neck and shoulders.

Powder and pomatum were profusely used in the reign of George II., and ladies wore as much false hair as they conveniently could. Various stiff and unnatural-looking curls also came in vogue, such as the French or sausage-shaped curl, and the German or roll-shaped curl, which had to be well frizzled underneath to give it amplitude and roundness. These elaborate head-dresses took much time to adjust, and required the skill of a hair-dresser to rear them properly; hence it was impossible that they could be done up every day, or even every week; so ladies slept in them —how? they best know. About the same period, wigs closely resembling those of the opposite sex were worn by ladies, the only difference between the head of a man and the head of a woman consisting in the former terminating behind in a *queue toupé*, and the latter in a club or fold of hair, termed a *chignon*.

RINGLETS AND RIBBONS.

From 1790 to 1800 the use of powder began to be discontinued. Wigs and false hair began also to decline, and women were proud of their own unsullied locks. The hair was coiled in a profusion of thick ringlets, and these were allowed to fall like a veil over the forehead and face, as well as on the neck and shoulders, seldom confined save by a fillet or bandeau, which supported a flower or knot of ribbons.

Crops, in which the hair was parted down the middle and curled all around in rows of short curls reaching nearly to the crown of the head, or in which the parting was over the temple, and the curls were raised on one side, the head almost in a "Brutus," succeeded. Afterwards the back hair began to be worn long, tied nearly at the crown of the head, and raised in curls or rolls, or folds, at the top of the head, and these backed up by a high comb resembling that of a Spanish woman; while the front hair was disposed in French curls, like so many sausages. These in turn gave place to elaborate plaits looped down each side of the face, and surmounted by bows of plaited hair at the back. Then, in turn, gradually stole in the simple bands, the graceful curls, the classic braids of the last twelve or fifteen years, as seen in England and the United States especially, which combine elegance, neatness and artistic grace.

In the earlier periods, in France, the women hid away their hair beneath their head-dresses, as was the fashion with the earlier queens of England. Then came the more elaborate styles and perukes. One portrait of Marguerite of Navarre represents her with powdered hair curled over the head and sprinkled with diamonds. It was, however, not until the beginning of the eighteenth century that those turrets and mountains of hair were piled on the heads. Cushions, whalebone, and sundry other things were used to train the hair over and support it.

A head-dress in the reign of Louis XIV. was one of the most becoming of its kind. It consists of rows of full curls raised one above the other to the crown of the head. Between each row is a string of pearls, and in the centre of the head-dress a centre-piece is so placed that its pendants shall touch the top of the forehead. The long back hair is curled and floats over the neck and shoulders, and often has gems or flowers carelessly entwined with it. In the reign of Louis XV., the hair was combed up from the forehead and all around, and arranged in perpendicular rows of frizzled French curls; the whole surmounted by a species of ruff, which passes under the chin and there fastens.

GOOD SENSE AND TASTE.

During all this period, however, there were many elegant women who dared to be "out of fashion," and had the good sense and taste to wear their hair naturally in curls, in bands or plaited, wound around the head. Occasionally, a royal caprice sanctioned such innovations on the aristocratic discomfort of powder, pomatum and periwigs. Various modes of wearing the hair succeeded each other rapidly, during the period of the French Revolution. Powder and all those pet penchants of the disgraced nobility were banished, although the wigs were generally retained. The beautiful Madame Tallien, toward the end of the Reign of Terror, and immediately after her rescue from prison, introduced the fashion of cutting the hair quite short all around, like that of a man, and subsequently (we imagine as her hair began to grow again), the clustering crop of short curls.

Many grotesque and extraordinary styles of head-dresses were introduced at the beginning of the nineteenth century. There was the "Giraffe," a pyramid of rolls or bows of hair, supported by a tall comb and heightened by flowers. Then there was the "casque," wherein all the hair was combed together, and tied up at the very top of the head,

like that of a Chinese woman, and there raised in bows or plaits over wire or whalebone foundations, into a kind of reversed pyramid.

The Spanish, the modern Greeks, and the Swiss modes of wearing the hair are familiar to all. The Portuguese and some of the Italians plait or braid their hair and then enclose it loosely in a silken net; or, according to Lady Morgan, comb it back behind the ears, and dividing into tresses, confine each of these at intervals into beads or ribbons, and let them float over the neck and shoulders in a very graceful and picturesque fashion. Turkish women, too, divide their hair into innumerable tresses or plait them or gem them with coins or jewels. The Americans have a similar fashion, but they add masses of false hair to their own, and when seated appear half-buried in a heap of partially dishevelled locks.

CRAPE CUSHION AND OSTRICH FEATHERS.

A fashionable mode of wearing the hair in the eighteenth century is thus described: It was raised from the forehead to the temples and brought over a crape cushion, a small portion was confined and curled at the top of the head, whence a plume of ostrich feathers fell gracefully over the left side, while a single curl waved on the neck beneath. The remaining quantity was divided into ringlets and brought back over the right shoulder. Another mode of wearing the hair prevalent for a long time in France, was having it slightly curled on the temples, and collected behind into distinct tresses by means of bands or clasps of various kinds.

The distinguishing fashion of the ninth and tenth centuries was to twist and plait the lower half of the hair, so as to form two separate tresses which were turned up on each side of the cheek. In the next century the hair on the forehead of women disappeared entirely under the bottom of a head-dress peculiar to the time. Subsequently, a tasteful mode of dressing the hair, with but few interruptions, seems to have prevailed till the close of the fourteenth century.

In the reign of Charles V., the luxurious Isabella of Bavaria, introduced a remarkable style of head-dress, which was thrown aside about 1483 for more tastefully arranged head-dresses. These, however, were obscured by black veils a few years afterward.

As before intimated, early in the sixteenth century, the ladies began to turn up their hair. Queen Margaret, of Navarre, frizzled her hair at both temples and turned it back in front. Various fantastical and ridicu-

lous modes of wearing the hair prevailed from time to time. At the commencement of the last century, the ladies puffed out their hair, and used hair-powder to an excessive degree. The French women wore their hair short and curled round their faces; but so loaded with powder that it looked like white wool.

In some satirical songs and poems on costume written in 1755, we find the following description of the hair, as then worn:—

"Be her shining locks confined
In a three-fold braid behind;
Like an artificial flower,
Set the fissure off before;
Here and there weave ribbon in,
Ribbon of the finest satin."

The follies of the head-dresses then worn by the ladies, are thus indicated in the "London Magazine" for 1777:—

"Give Chloe a bushel of horse-hair and wool,
Of paste and pomatum a pound;
Ten yards of gay ribbon to deck her sweet skull,
And gauze to encompass it round."

Byron's description of Haidee may be appropriately cited here:—

"Her brow was overhung with coins of gold,
That sparkled o'er the auburn of her hair,
Her clustering hair, whose longer locks were rolled
In braids behind; and though her stature were
Even of the highest, for a female mould,
They nearly reached her heel."

In Syria, the ladies decorate their heads with dollars and different kinds of money; sometimes the coins hang down to both ears and must be a great weight. This fashion is occasionally practiced in some parts of Greece.

Among the Jewish women a high forehead was considered an indispensable mark of beauty, and to prevent the hair from growing low, they were in the practice of wearing a bandage round the forehead of scarlet cloth. Petronius, to give an idea of a perfect beauty, says that her forehead was small, and showed the roots of her hair raised upwards. This fashion adopted by the Chinese, was not long ago a modish coiffure in France.

Sterling, in his work on "Spanish Artists," says:—Luxuriant tresses

were twisted, plaited, and plastered in such a shape that the fair head that bore them resembled the top of a mushroom; or curled and bushed out into an amplitude of fizzle that rivalled the cauliflower wig of an Abbé. An ungainly mode also prevailed of parting the symmetry and balance of its outline; of which some wretched portraits in the Spanish gallery of the Louvre, impudently ascribed to Velasquez, might be cited as examples sufficiently offensive and deterring."

The custom of having children's locks braided in long plats, and tied up with bows, which was prevalent a few years ago, was not a new fashion, for there is a portrait extant of the son of Villiers, first duke of Buckingham (1637), with his hair thus ornamented. The fashion for young people to cover the hair with a silken net, which was lately prevalent both in England and America, as well as in France, was in vogue several centuries ago. Some of the nets were very elegant in form.

The tribes and people of all nations have some peculiarity in the mode of dressing the hair. Whether Ethiopian, Creole, or Indian, women have always given much attention to dressing the hair. In many instances extreme good taste is displayed, but in the majority of styles of wearing hair has not been much admired by the ladies of enlightened and civilized nations. In other instances, the head-dresses are uniquely fantastical and picturesque; but we will not now attempt a description of them.

MODERN METHODS OF DRESSING THE HAIR.

CHAPTER XXXIII.

FOR a period much longer than is usual in such matters, the hair was, until of late, worn Madonna-like, drawn plain over each cheek, after the fashion adopted by the late Queen Victoria of England. It was, however, reserved for the regal beauty of an allied nation to modify this fashion. The Empress Eugenia introduced a style that is equally in good taste with that of the British Queen. It accordingly may perhaps be said that with these illustrious ladies for a guide, we can hardly deviate from the sounder canons of taste. This idea, nevertheless, involves a plausible fallacy. Whatever the prevailing fashion, it must necessarily be modified to suit the immense diversity of contour in the facial line. The fashion of hair-dressing a few years ago was almost identical with the styles of the reign of Louis XIV.

We have already referred to the odious fashions which prevailed in the olden time, and we may here remark that the present tasteful and truly picturesque modes of wearing the hair induces us to lay down some certain rules for the guidance of all ladies who would wish to arrange their hair in an elegant and becoming manner.

To speak broadly and generally, we cannot be too attentive to lines. By forcing the hair upon the cheeks, and squaring it over the forehead, we give to the face a sort of pinched hatchet-shape, anything but attractive. In truth, the oval should be sedulously preserved by any and by all means of art. When the line of beauty does not exist, the hair should be so humored that the deficiency may not be remarked. Nothing is more common than too see a face, which is somewhat too large below,

made to look grossly large and coarse by contracting the hair on the forehead and cheeks, and then bringing it to an abrupt check; let the hair fall partially over, so as to shade and soften off the lower exuberance.

To a lady who would preserve her high privilege—the supremacy of beauty, the annexed collection of examples of mistakes, defects, etc., will prove of extreme value. Confining ourselves still to general observations, we may state that some ladies press the hair down close to the face, which is to lose the very characteristic of the hair—ease and freedom. "Let the locks," says Anacreon, "lie as they like;" for, poetically at least, the Greeks give them life and a will.

There are some of the beautiful sex, who wear the hair like blinkers, which is apt to suggest that they may "shy" on near approach. Let a lady's head-dress, whether for a likeness or for daily adornment, be arranged as in the portraits of Rembrandt or Titian. Let us subside imperceptibly into shadow so as not to exhibit too hard an outline. It should not, in fact, be at any time isolated, and by such means out of sympathy with all surrounding media. They should at least have the merit of floating into the background, and, in their fall, softening the sharpness of the contours of dress about them.

MISTAKES IN HAIR DRESSING.

We may further remark, that as the human hair forms so striking an addition to personal beauty, it will naturally be supposed that the utmost ingenuity has been put in practice to increase it in glossy thickness and delicate pliancy, to perfect its color, and above all, to arrange it in the most tasteful manner; and yet, by some strange perversion, the most fearful mistakes have arisen in adapting the hair to the peculiar physiognomical characteristics.

How to Dress the Hair.—Light hair is generally most becoming when curled. For an oval face, long and thick ringlets are suitable; but if the face is thin and sharp, the ringlets should be light, and not too long. Open braids are very beautiful when made of dark hair. A simple and graceful mode of arranging the hair, is to fold the front locks behind the ears, permitting the ends to fall in a couple of ringlets on either side behind. Great care should be taken to part the hair directly in the centre of the forehead. Persons with very long, narrow heads may wear the hair knotted very low at the back of the neck.

If the head is long, but not very narrow, the back hair may be drawn

to one side, braided in a thick braid, and wound around the head. When the head is round, the hair should be formed in a braid in the middle of the back of the head. If the braid is made to resemble a basket, and a few curls permitted to fall from within it, the shape of the head is much improved.

FONTAGNES.—By this title is designated a ribbon, which forms an important ornament in certain styles of coiffures. The following is its origin: Mademoiselle de Fontagne, maid of honor to the Princess Palatin, by the favor of Louis XIV., the great duchess, who spent from fifty to a hundred thousand crowns a month, was the embodiment of the graces, and the leader of the ton. While at a hunting party, the wind having disarranged her head-dress, she fastened it with a ribbon, the bows of which fell over the forehead. This fashion was immediately adopted by all the ladies of the Court, and it passed with the name of Fontagne throughout France.

SUGGESTIONS FOR GRACE AND BEAUTY.—We have already given the modes of arranging and dressing the hair in all ages of the world. We may here present some of the peculiar means by which the grace and beauty of females are heightened among many modern nations, whether enlightened or uncultivated.

ORIENTAL CUSTOMS.

In Asia the hair has always received elaborate attention both by male and female. The Persians use the henna to dye their beards. The women braid their hair, and dye their eyebrows and eyelids with plumbago. The Bedouin Arabs wear their hair curling in ringlets over their shoulders.

The toilet of the Arab ladies in Egypt is the only thing they study, and usually with great success. Their dress is rich, graceful and picturesque. Long curls and plaits of their beautiful black hair, with ornaments of gold suspended to them, hang over their neck and shoulders. They dye the eyelids with a black powder, called kohl, and the inside of their hands and nails with a red stuff called henna (the leaves of the Egyptian privet).

"Who has not heard of the Vale of Cashmere?"

A Mussulman gentleman, attached to the Court of Jehangur, writing to a friend at Delhi, of the lovely damsels of this beautiful valley, after exhausting the powers of language in his description of various

attractions, among other details says: "The musky and wavey ringlets of those heart-ravishing plunderers, turn into a thousand wily snares like the links of a chain. When they let loose their flowing tresses from their soul-enchanting heads, the point of each hair can captivate a thousand hearts. They can draw a thousand Josephs from the well where his brethren have immersed him." The Moslem writer seems to have paraphrased Pope's lines:

> "Fair tresses, man's imperial race ensnare,
> And beauty draws us with a single hair."

The Sindhian Beluchi allow the hair to fall in wild luxuriance over their shoulders. The hair is dyed black when it becomes gray. The holy characters use the henna plant to impart a red tinge to the beard and hair.

LIKE THE TAIL OF A PEACOCK.

Among the qualifications of a Singalese belle are that "her hair should be voluminous, like the tail of a peacock; long, reaching to the knees, and terminating in graceful curls, and her eyebrows should resemble the rainbow."

The ebon hair of the Kandian women is twisted into a knot at the back of the head, where it is confined by gold, silver, or tortoiseshell-pins, which are usually most exquisitely chased. This style of arranging the hair is adopted in Ceylon, by every native woman, and the coiffure of the hair, at the back of the head, is classically elegant. The four hair ornaments of a principal chief's wife, when studded with ambers and other gems, have often been valued at $250.

In Burmah the hair of both sexes is worn long, and tied on the top of the head in a knot. The Chinese females wear their head uncovered and decorated with beautiful artificial flowers. The Japanese women decorate their hair with flowers and ribbons, and use gold and silver bodkins to confine the hair. They anoint it with cocoa-nut oil, and plait it Chinese-fashion.

The desert-tribes of Africa dress their hair with ghee or butter, which in that climate is entirely fluid. I have seen types of Bisharee women, in which the style of wearing the hair is pleasing and tasteful. Some Negresses use false tails as well as false locks, as our belles do, the long flowing curls being preferred by the sooty Nigertian beauties, in spite of such an ornament being unnatural to them.

The aboriginal ladies of Australia are conspicuous for their head-gear. Glowing in grease and red ochre, the ringlets of these "dark angels" are decorated with opossum tails, the extremeties of other animals, and the incisor teeth of the Kangaroo

In New Zealand, married women permit their tresses to flow loosely over their shoulders. Oil is employed in beautifying the hair. They use two kinds—shark's oil and that obtained from the seeds of a tree called "titoki," the odor of both of which oils is very offensive. Young girls let their hair fall over the forehead, cutting it a little above the eye-brows. Bunches of the white feathers of the albatross or of the gannet, and of the beautiful tail feathers of the "luria," which are black tipped with white, are worn in the head of both sexes, and form a strong contrast to the raven blackness of the hair.

BLACK, GLOSSY RINGLETS.

The Oceanic Islanders pay great attention to the adornment of their persons. The hair of the females is arranged in short, loose curls, while the eyebrows are reduced. The head is ornamented with elegant native flowers, sometimes in great profusion, at other times only a few Jessamine blossoms, or a small wreath, woven in their black, shining ringlets. They display great taste in the use of flowers in adorning their hair. They may be frequently seen with garlands of yellow flowers around their brows, and flower branches of brilliant scarlet fastened in their hair. They dress the hair with a gummy substance obtained from the trunk of the cocoanut tree, or in the viscid gum of the bread-fruit tree, which gives it a shining appearance, and fixes it as straight as if it had been stiffened with rosin.

The hair of the South Sea Islanders is worn in various fashions, according to the taste of the wearer. The natural color of the hair of the females can scarcely be ascertained, as they use lime and pigments, which make it red, brown, white, or black, according to the taste of the individual. They wear a kerchief of very thin gauze-like paper-cloth, thrown loosely over the hair, and tied around the head in the form of a turban. The color of the hair is usually red or yellow, by the universal method of powdering it with burnt shells and coral, of which powder they usually carry a small gourd or box filled with it about them.

The Fejees smear their hair with red ochre and grease. The married women wear their hair short, the girls rather long. The natives of the

Wallis Islands and the Navigator's Group, wear their hair long and matted, which serves as a protection against the hot sun and heavy rains.

The natives of the Brittannia Islands take great pains in dressing their hair. So with those of the Loyalty Islands and the Isle of Bornobi, where they use a variety of perfumes mixed with cocoanut oil. Both sexes wear round their heads at feasts and other occasions wreaths of beautiful, sweet-scented white and yellow flowers. The female has often a few pale blossoms wreathed round her hair, richly contrasting its jetty curls.

Among the natives of South America, the hair is worn in endless variety—in some places with singular taste, and in others in a slovenly manner. The hair of the Indians of Behring's Strait, is done up in large plaits on each side of the head. The edges of the eyelids are blackened with a plumbago rubbed up with a little saliva upon a piece of slate. This is a very ancient practice, and is often alluded to in the sacred writings, and the custom now prevails extensively among Eastern ladies. (See 2 Kings ix. 30; Jer. iv. 30; Ezek. xxiii. 40. Also Eadie's Dictionary of the Bible.)

MANNER OF TINGEING THE HAIR.

According to Eadie, the Eastern ladies tinge their hair and the edges of their eyelids with a fine black powder moistened with oil or vinegar. The manner of doing it in the East is thus described: A smooth, cylindrical piece of ivory or silver, shaped like a quill and about two inches long, is dipped into the composition and placed within the eyelashes, which are closed over it. This "eye-salve" is made with lead ore and other ingredients.

The Esquimaux women consider it disgraceful to cut off their hair. It is only done in deep mourning, or on a resolution never to marry. The act of cutting off the hair is of greater importance to an Esquimaux woman than that of assuming the veil to an European woman, as she is then doomed to perpetual celibacy. Usually, they weave their locks into a double ringlet on the crown of the head, and ornament it with ribbons and beads. The North American Indians in every part, usually have long hair, arranged in various ways; sometimes flowing loosely, other times in braids, and generally ornamented with feathers, ribbons, etc.

Frequent allusions are made in Scripture to the fashion of wearing the hair. It was the custom of the men to wear it cut short, but the

women were required to wear it long. In the time of David, however, the hair was considered a great ornament, and the longer it was the more it was esteemed. They were in the habit of powdering it with dust of gold.

The Emperor Commodus is said to have powdered his hair with gold. It is singular how old fashions are revived. Not long since some fashionable ladies in Paris reintroduced the practice of wearing powder in the hair. Some carried the matter to the extreme of using gold and silver powder; gold for brunettes, and silver for blondes. There were five or six marvels in gold and silver powder. They might have been called the *Danæ* powdered by Jupiter. The most remarkable of the brunettes in gold powder, was a lady of the high financial circle. The silver powder was most adorably wedded to the locks of that Spanish blonde, Madlle. Montigo, afterwards Eugenia, Empress of the French.

Lady Mary Wortley Montague thus describes the modern mode of wearing the hair by the ladies in the East:—"The hair hangs at full length behind, divided into tresses, braided with pearls and ribbons, which is always in great quantity. I never saw in my life, so many fine heads of hair. In one lady's, I have counted one hundred and ten of these tresses, all natural."

The dancing girls of India pay great attention to dressing their hair. Mr. Roberts, when speaking of the Hindoos, says, "When a dancing-girl is in full dress, half her long hair is folded in a knot on the top of her head, and the other half hangs down her back in thick braids."

Miss Pardoe, in the "City of the Sultan," tells us that, "after taking a bath, the slave who attended her spent an hour and a half in dressing her hair."

DIRECTIONS FOR TREATING THE HAIR.

CHAPTER XXXIV.

SERIOUS disorders of the hair predispose to baldness, ringworm, premature gray hair. Bodily infirmity, disease and mental irritation, sudden change of climate, have an injurious effect upon the hair. Many of the morbid states and conditions of the hair owe their virulence to connection with diseases of the skin.

The hair of the head may become weak and slender, and split at the extremities, from a deficient action of the bulb, in consequence of debility or impaired vital power, frequently connected with disorders of the assimilating organs. To preserve the hair and keep it healthy, all excessive or extraordinary excitement should be avoided. Mental and bodily over-stimulation are injurious. An equable temperament of mind and body are essential to the health and beauty of the hair.

Curling the hair in strong or stiff paper has a very injurious effect. The more loosely it can be folded or twisted, the better for its free and luxurious growth. Soft paper or silk should be used for curlers when curling the hair. Those who wear the hair in bands or braids ought to twist or fold it up very loosely at night, when retiring to rest. It should always be liberated from forced constraints and plaits. It must be well combed and thoroughly brushed every morning. After oil has been applied, the hair should be nicely smoothed with the palm of the hand.

To prevent the hair from splitting, and to increase the length and strength, the ends should be nipped once a month.

Many mothers cut the hair of their daughters when young, in the idea that it will prevent baldness and cause it to grow longer, thicker and more abundant. This is a mistaken notion. Cutting has a tendency to injure its beauty and retard its maximum growth. It is quite sufficient to tip the ends once a month.

Hair has turned gray in a single night, from the effects of mental emotions and violent passions. Disappointment, bereavement, deep grief, intense care, produce devastating effects on the hair. Dr. Wardrop, in his work on "Diseases of the Heart," states that the changes which are induced by arterial disturbance upon the cutaneous capillaries, are illustrated in a remarkable manner in persons where the hair of the head has suddenly become white from increased action of the heart caused by violent mental excitement. He knew a lady who was so deeply grieved on receiving the intelligence of a great change in her worldly condition, that she had her dark hair changed into a silver white in a single night.

Sir Walter Scott, in "Marmion," says of Mary, Queen of Scots:

"For deadly fear can time outgo,
And blanch at once the hair."

M. Bichot tells of a man whose hair turned white in a few hours after receiving some dreadful news. Sir Thomas More became gray during the night preceding his execution. Lord Byron alludes to this generally received opinion in the "Prisoner of Chillon":

"My hair is gray, though not with years,
Nor grew it white
In a single night,
As men's have grown from sudden fear."

Falstaff, in Shakspeare's King Henry IV., says: "Thy father's beard is turned white with the news." Madame Campon states that Marie Antoinette's hair turned white during her transit from Varennes to Paris.

When the Duchess of Luxembourg was caught making her escape during the terrors of the French Revolution and put into prison, it was found the next morning afterward that her hair had become perfectly white.

A Spanish officer, distinguished for his bravery, was in the Duke of Alva's camp, and an experiment was made by one of the authorities to test his courage. At midnight the provost-marshal, accompanied by his

guard and a confessor, awoke him from his sleep and informed him that, by order of the viceroy, he was to be executed, and had only half an hour to make his peace with heaven. After he had confessed, he said that he was prepared for death, but declared his innocence. The provost-marshal at this moment burst into a fit of laughter, and told him that they only wanted to try his courage. Placing his hand upon his heart, with a ghastly paleness of face, he ordered the provost out of his tent, observing that he had done him an evil service. The next morning, to the wonder of the whole army, the hair of his head, from having been of a deep-black color, had become perfectly white.

There are many other similar cases on record. Vanquelin is of the opinion that this phenomenon is to be attributed to the sudden extrication of some acid, as the oxy-muriatic acid is found to whiten black hairs. Parr thinks that this accident is owing to the absorption of the oil of the hair, by its sulphur, as in the operation of whitening woolen cloths.

Most persons on sudden exposure to cold, and experiencing any emotion of fear or horror, feel a creeping sensation pass over the head. This sensation is accompanied by a certain degree of erection of the hair, but not to such an extent as to cause it to "stand on end."

Macbeth says:—

"What horrid image doth unfix my hair."

And again:—

"The time has been—
* * * and my fell of hair
Would at a dismal treatise move and stir,
As life were in it."

Sir Walter Scott alludes to this:—

"Back from her shoulders streamed her hair
The locks, that wont her brow to shade,
Stand up erectly on her head."

In the Book of Job, at the appearance of a supernatural presence, Eliphaz states that the hair of his "head stood up."

A description is given of the result of terror by Shakespeare in the Ghost's speech to Hamlet:—

"I could a tale unfold, whose lightest word
Would make * * *
The knotted and combined locks to part,
And each particular hair to stand on end,
Like quills upon the fretful porcupine."

There is no doubt of the fact that alarm or fright may cause the hair to turn grey, or make it assume a certain degree of erection. The *cause* may be, that sudden fear drives the blood to the heart; and the extremities being left cold; the skin thus contracts, and the effect is to raise the hair. The decay or fall of the hair usually commences at the crown or on the forehead and temples. It often takes place from disorder of the digestive organs, or of the constitution, or of a local affection of the scalp extending to the hair follicles. It indicates premature exhaustion of the nervous energy. Premature loss of hair may extend to all parts of the body.

According to Dr. Copeland, the remote causes of baldness are anything that debilitates or exhausts the system, such as dangerous hemorrhages, low fevers, care and disappointments, the depressing passions, anxiety of mind, excessive study, the contact of rancid, septic, or putrid animal matters with the scalp, and the frequent and prolonged use of mercury.

BALDNESS AND ITS CAUSES.

Baldness may also be caused by exposure to the sun's rays, by the fumes of quicksilver, by the friction of a military cap or helmet, by chronic eruptions of the scalp, and by the use of tobacco. The salts of sea water, left in the hair, will cause it indirectly; hence, in sea-bathing, ladies, especially, should wear an oil silk cap, else it will be found difficult to dry the hair thoroughly.

Baldness may arise from contraction or relaxation of the skin of the head. Strong local irritation, which produces a tendency of blood to the part, is frequently efficacious in restoring the hair in bald places on the head. Blistering, the application of caustic potash, and an ointment of lard and cantharides, have been used with more or less advantage. They are, however, dangerous applications, and cannot be generally recommended. If the bald part becomes red after friction with the hand, there is every chance that the skin may become soft and permeable for a renewal of the hair.

It requires unremitting attention to restore hair. The action of the blood through the deadened tissue of the skin must be promoted; the tubes relieved of obstruction, and a free secretion of the fluid by which the hair is nourished, excited. Where the constitutional powers remain unimpaired by age or disease, there is always sufficient vitality in the part to ensure activity and renewal of the hair.

Among all nations a premature loss of hair has been considered humiliating and degrading. The loosening of the hair, if neglected, will terminate in baldness. Blanching of the hair is mostly common in persons of swarthy complexion and black hair.

Baldness is quite common among men, but seldom seen among women. Literary ladies, however, are subject to this defect. Farmers, and those who exercise, or pursue manual labor out of doors, usually retain their hair; while the man of science and literature, the merchant, the shop-keeper and the factory operative, often become bald. In short, all who over-exert the intellectual powers, and neglect or are ignorant of the precautions necessary to preserve the hair, are subject to the affliction, for such it really is, of baldness or general loss of hair.

WHITE HAIR AND OLD AGE.

White and gray hairs are natural to old age, owing to the decay of system and the exhaustion of the coloring matter of the hair. There is a general dislike to the approach of gray hairs. The prejudice is equally shared by male and female. Philosophers consider gray hairs honorable; they are certainly venerable in appearance, but there are few persons who would not prefer youth and beauty to age, baldness, or gray hairs, however honorable and venerable they may appear. Baldness and gray hairs, however, are not unseemly in the aged, although a great blemish in the young.

Gray hairs are not the natural indication of old age. Gray hairs have been known in children of six years, while it is common to see persons of both sexes, from twenty to twenty-five, looking as though seventy winters had passed over them. On the other hand, there have been frequent instances of persons over seventy years of age who had not a gray hair in their heads.

It is stated that the people of ancient Troy were so disgusted with gray hairs, that they would hold their heads for hours over the steam of boiling herbs, in vain attempts to change the color of the hair. A lady once said to Douglas Jerrold, "I cannot imagine what makes my hair turn gray, unless it is the 'essence of rosemary' which my maid is in the habit of dressing it with." "I should rather be afraid," replied the wit and satirist, "that it is the 'essence of time!' (thyme)."

Men usually begin to get gray about forty, many between thirty and forty, and others not until a more advanced age. Meckel considers that

the hair begins to turn gray at thirty, but Elbe gives forty as the period of life at which the change first makes its appearance; much, however, depends on the habits and constitutions of the individuals.

Fineness and silkiness of the hair are esteemed as beautiful, but fineness must not be confounded with neatness. The hair, however, of a healthy person is as strong as if it were coarse; but the thinness of the substance from ill health of the body or over-growth, shows a want of strength and a tendency to break—the one cannot be mistaken for the other. Shaving the head is injurious to the hair, and should never be resorted to unless absolutely necessary, as in cases of sickness. Shaving the head increases the irritation, on which the loss of hair depends. It may cause the hair to grow thicker, but it will induce it to fall earlier and more easily.

DISEASES THAT AFFECT THE HAIR.

There are several varieties of a disease affecting the hair known as "porrigo." All crude vegetables and fruits, saccharine preparations, and stimulating substances are to be avoided in this form of disease. It originates in a great measure from uncleanliness. A medical man should always be consulted in this disease. The disease is as virulent as it is contagious. It may be contracted from the thoughtless interchange of hats, bonnets, caps, etc., and the use of combs and hair-brushes promiscuously. When the scalp is inflamed and tender, the blotches should be sponged twice a day with warm water, and covered with a light clean linen cap. Irritating applications must be avoided. A blister applied to the scalp may sometimes remove the complaint, but cannot be relied upon. The hair ought to be kept cut close, and the head perfectly clean. This with suitable food and open exercise will generally cure the disorder in a few weeks.

The removal of the hair was enjoined by the Levitical law in leprous indications. The long hair of persons who neglect it frequently becomes matted or inextricably interlaced. M. Cazenave, physician to the hospital of St. Cours, Paris, in his treatise, as translated by Dr. Burgess, gives the following general directions for the management of the hair:

"Pass a fine-tooth comb, at regular intervals every twenty-four hours, through the hair, in order to keep it from matting or entangling; separate the hairs carefully and repeatedly, so as to allow the air to pass through them for several minutes; use a brush that will serve the double

purpose of cleansing the scalp and gently stimulating the hair bulbs. Before going to bed it will be desirable to part the hair evenly, so as to avoid false folds, or what is commonly called turning against the grain, which might even cause the hair to break. Such are the usual and ordinary requirements as to the management of the hair. There is, on the other hand, a class of persons who carry to excess the dressing and adornment of the hair, especially those who are gifted with hair of the finest quality.

"Thus, females are in the habit of dragging and twisting the hair, so as to draw the skin with it; the effect is to break the hairs and fatigue the scalp, and finally to alter the bulb itself. The fine-tooth comb is also too freely used, especially when the hair is divided—a part that the most particular attention seems to be bestowed upon. These separations, and the back of the neck whence the hair is drawn, in females, towards the crown of the head, are parts which first show signs of decay, or falling off of the hair."

HYGIENIC TREATMENT.

In a hygienic point of consideration, as intimated elsewhere, the dress of the hair best adapted for females, especially for young girls, is that which keeps the hair slightly raised, drawn as little as possible, carefully smoothed, and arranged in large bands, so as to admit the hair to permeate; to unfold it morning and evening, and brush it lightly, but carefully; in a word, to dress it in such a manner as will not require dragging or twisting, but leave it free. If fashion requires it to be tied and drawn, and the individual yields to the mode, it should be unfolded morning and evening, and allowed to hang loose for half an hour.

Long, luxuriant and glossy tresses are the admiration of every person of taste and sense. A fine head of hair is the pride and joy of every woman's heart. The more naturally it can be worn, the better, not only for its preservation, but its elegance and richness.

In the language of that authority, Miss M. A. Yost, we may well exclaim: "How ignorant, how indifferent are we often to the nature, the properties and history of the most common things which surround us. The beautiful gift of bountiful nature, the human hair, we see and admire, and we weave it into all the fantastical forms dictated by the capricious goddess, fashion; but we seldom pause to reflect upon it, to marvel at its growth and beauty, to mark how it obeys the laws of vegetation, how it

flourishes for a time, reaches to a certain length, falls and is replaced by a succession of new shoots, and eventually decays from age."

"Truly," continues the same writer, "the hair is one of the crowning beauties bestowed by nature on human beings. What poet has neglected to sing its praise? All hues have been celebrated, from the

'Lassie wi' the sunny locks,'

of Allan Cunningham, to the aged man whom Crabbe describes, with

'Those white locks thinly spread
Round the bald polish of that honored head.'"

"To women particularly is hair an adornment. Take that from her, and she loses one of her greatest ornaments. Surely Venus herself would cease to be Queen of Beauty if she had her head shaved. And how easy fashion has been, throughout all ages of which we have any record, with female tresses; how she has twisted and tortured, disfigured and confined them; dyed, variegated and blanched them; greased, stiffened and frizzled them! In short, how she has done her best in some portion of every age, to nullify their graceful effects and convert that which should have been a beauty into a deformity.

CLEANLINESS AND FRICTION.

"Much has been said relative to the treatment of the hair, and oils, balms, pomatums, creams and greases have been recommended without number for its nourishment and preservation. Cleanliness, however, and friction are its best stimulants and improvers. We do not advocate the use of sharp-pointed, scratching combs; neither do we approve of those very hard brushes, with which some persons delight to torture themselves; but a moderately stiff brush, with bristles from about three-quarters of an inch in length, will cleanse the hair well and also produce a warm glow on the skin; and this should be well used morning and evening every day, and then the hair polished with a softer brush.

Cold water is the best wash for the hair. Soaps generally contain too much alkali and pungent matter to act beneficially on the skin of the head; but boiling water poured on bran, left to stand until cool and then well-strained off, washes long hair very nicely. If the hair has a tendency to fall off, the skin of the head may be brushed with a small, hardish brush dipped in honey-water, or rosemary-water, or distilled vine-

gar, morning and night for a few days, and then brushed with a hair-brush until it glows."

To the foregoing judicious remarks of Mrs. Youat, little more need be added. The hair should be kept scrupulously clean by brushing, etc., but never be roughly handled. By improper treatment the hair may be irretrievably injured. Brushes applied to the skin of the head should be soft and pliable than otherwise, but stronger ones may be employed for the long hair. From the respectable perfumers excellent lotions may be obtained which are effectual in removing scurf and cleaning hair, while well-prepared vegetable oils may be advantageously employed in promoting growth and gloss.

Every people, however savage, have had their own peculiar greases or oily preparations for the hair. The vegetable oils are always to be preferred. Animal fat, with some few exceptions, is exceedingly injurious to the hair, being often the cause of scrofulous disease of the scalp. Fluid vegetable oils should be selected as the best means for obviating a deficiency of oleaginous products in the cells of the hair-tubes.

LOCKS STRAIGHT AND FLACCID.

Ladies often wonder why it is that their hair loses its curl and becomes straight and flaccid. The secret of this is, it readily imbibes moisture from both the skin and the atmosphere, when the natural secretion of the lubricating fluid in the tubes of the hair is impeded ; and, by degrees, the latter becomes coarse, harsh and scurfy. Obviously, therefore, the hair must be supplied naturally or artificially with its necessary nourishment, and pure fluid vegetable oil is the only desirable application for this purpose. It should be well initiated into the roots of the hair, as well as throughout the general texture, but it should not be lavishly employed, as in that case it would become a cloy.

As before remarked, every people employ some kind of oil for the hair. The Esquimaux and the Greenlanders patronize train and seal oil. The South American fair ones of the Amazon and Orinoco, use the more delicate turtle oil. Others use the fat obtained from the alligator. The Zealanders adopt shark's oil. In the South of Europe, and throughout the Mediterranean, olive oil is in constant request. Cocoa-nut oil is much used in the West Indies. In the Pacific Islands, cocoa-nut oil and castor oil are used. The oils of the palm, butter tree, and earth-nut, are vague among the African people.

Cleopatra was the first to lead the fashion in bear's grease. The fat of ducks, moles and vipers has not survived the age of William and Mary, while beef's marrow and hog's lard play a distinguished part in the hair dresser's laboratory, and greatly economize the destruction of Bruin. We are told that the Typee girls devote much of their time in arranging their fair and redundant tresses. They bathe several times a day, and anoint their hair with cocoa-nut oil, after each ablution. Melville observes that this oil is fit for the toilet of a queen. Mrs. Osgood, our American poetess, thus sings in praise of this sunny clime:

"The glowing sky of the Indian isles
Lovingly over the cocoa-nut smiles,
And the Indian maiden lies below
Where its leaves their graceful shadows throw;
She weaves a wreath of the rosy shells
That gem the beach where the cocoa dwells;
She binds them into her long black hair
And they blush in the braids like rosebuds there.
Her soft brown arm and her graceful neck,
With those ocean blooms she joys to deck.
O, wherever you see
The cocoa-nut tree
There will a picture of beauty be!"

No doubt enough of the cocoa-nut oil would answer a valuable purpose in beautifying the hair, but the oils which hold a pre-eminence are a combination of the choicest vegetable products scientifically prepared, so as to conduce to the preservation and improvement of the hair.

Generally speaking, women of nervous and lymphatic temperament have usually less abundant hair than those of a sanguine or bilious temperament. The environment of the subject greatly affects the hair. Anxiety and mental trouble, ill health, especially, and disorder of the circulation or of the nervous system will often cause the hair to fall out.

Women who are very hard students, who are fretful and given to sitting up late at night, will in time surely weaken the hair, which thins rapidly in such circumstances. In infancy and early childhood the hair is generally pale in color, soft, thin, and very flexible. As the child grows older the hair gradually becomes more abundant, darker, coarser and less flexible.

In healthy youth and maturity the hair reaches its state of greatest luxuriancy and beauty, and if properly cared for it should continue thus

for many years in a nearly stationary condition. Unfortunately, it is the exception for the hair to remain full and luxuriant in growth on the heads of American women after they reach forty-five years of age. Generally speaking, before forty the hair very gradually becomes thinner and weaker and slowly loses its gloss and some of its color.

This condition is produced by the decreasing vigor of the circulation of the scalp, and only within the last few years has any treatment been devised that would succesfully ward off the attenuation consequent on the progress and wear and tear of life. Scalp massage, by restoring the vigor of the circulation, has imparted new life to the hair, and the benefits derived from this system are so marvelous as to almost appear miraculous.

It must me thoroughly understood by every one that the vigor, luxuriance and beauty of the hair positively correspond to the state of health of the scalp from which it grows. So long as the scalp is soft and thick and the blood is kept circulating with healthy vigor through its vessels the hair glands and capsules have ample space to exist and work in, and ample material in the shape of healthy arterial blood out of which to elaborate their secretions.

DECLINE OF THE HEALTH OF THE SCALP.

So long as the health and vigor of the scalp can be maintained the hair can be kept luxuriant and beautiful, But just as soon as the vigor in the circulation of the scalp begins to decline, whether from age, disease, neglect or other causes, it suffers gradual attenuation. The functions of the hair bulb are impeded, and as the declining process continues they are finally arrested altogether. When the circulation is only impeded the result is weak, thin hair. When the circulation is arrested baldness follows.

When the growth of the hair is weak or defective, the causes having been explained, it naturally follows that the cure for this condition can only be obtained by a process which will promote the healthy action of the skin of the scalp, by increasing the vigor of the circulation of the blood through its minute vessels.

Scalp massage alone will effect this stimulation. It must not, however, be forgotten that in order to keep the hair and scalp in a healthy state both must be kept scrupulously clean. The most extraordinary delusions and superstitions concerning the hair are those which insist

that the skin of the scalp and that the hair itself require no washing and should never come in contact with soap and water. Now, there is no more logical reason for not washing the hair than there would be for not washing the face or hands. The idea that all the rest of the body require soap and water, with friction, to keep it clean, except the hair and scalp, is certainly fantastic.

It has been observed that black or dark-haired subjects turn gray earlier than those with fair hair. The reason for this is that the supply of the iron pigment usually fails before that of the sulphur. If readers will reflect for a moment on the cause of gray hair, they must realize that to attempt to restore a color which has been lost or changed through the failure of the pigment of the hair bulb by an external wash or pomade is absurd.

To give yourself massage seat yourself in a comfortable low chair opposite a mirror. Take your hair down, shake it out, and part it in the middle. Brush it carefully and well. Brush always off from the face, never from the back of the head toward the face. Now place the tips of the fingers at the side of the head. Brace the fingers by pressure of the thumb, which should be firmly placed just back of the ear. Press the fingers well into the skin of the scalp and make a wheel-like motion with them. Move the hands all over the head, making this rotary movement.

THE SHUTTLE MOVEMENT.

Rest for a few moments, as the movements are fatiguing to the arms. And tired hands will not give a proper treatment. Next make what is called the shuttle movement. Press the fingers well into the scalp. Move the fingers back and forth shuttle fashion. Make this movement all over the head. Apply a hair tonic, if one is required, while making this movement. Now making the chucking movement, place one hand on the brow, the other at the back of the head. Press the fingers well into the scalp and with a sharp movement bring the hands toward each other. Continue all over the head in this manner.

There are other movements in scalp massage which have been described, but these are sufficient for the person who is to give herself a treatment. Remember that the essentials in the management of the hair are cleanliness and friction. Cleanliness, I repeat, is only another way of speaking of soap and water. The hair should be shampooed at the very least once a week.

So many women make a perfect bugbear of this very simple office that I am glad to be able to give a suggestion to the readers of this work which may do away with the dislike entertained for the shampooing process. Ordinarily the woman who has her hair shampooed or performs that service for herself is forced to bend her head over a bowl or tub while the shampoo is being rubbed into the scalp and the rinsing process going on.

By the time the operation is completed she is neck weary and frequently experiences a sensation of vertigo which is most distressing. And, when at last she is allowed to raise her head, she says with a sigh of thankfulness: "Thank goodness, that is over." If you are able to go to a hair dresser who has all the modern appliances, the shampooing process is not so tiresome, but the best way and the least troublesome, and by far the most thorough in its results, is to take a shampoo in your tub.

HOW TO SHAMPOO THE HAIR.

Draw the water exactly as for a full bath, and get into the tub. Have the shampoo mixture ready and rub it thoroughly into the scalp. Then take a large jug or pitcher, which should be at hand, and rinse the shampoo out of the hair. You can keep filling the pitcher from the faucets, getting water any temperature you choose, and without any inconvenience can thoroughly rinse the hair. Twist the hair up on the head, fasten it with a hairpin, let fresh water run, and take a quick all-over sponge, rinse and get out and dry the body; put on a loose bathing gown or wrapper, and proceed to dry the hair at leisure.

A shampoo taken in this way is much more thorough than any other process. It enables one to have oceans of water, and nothing gives the hair the same gloss and beauty when dry as thorough rinsing. I am aware that this is a somewhat unconventional mode of procedure, but it is the popular one wherever it is known in all circles. As I have said before, in ordinary cases the hair should be washed at least once a week, but if the head be much exposed to dust, or the subject perspires very freely, it should be shampooed every third or fourth day.

CARE OF THE TEETH AND SKIN.

CHAPTER XXXV.

A BEAUTIFUL set of teeth is one in which the teeth are compact and regular, and smooth, and pearly white, and in which the front ones, at least, are moderately small. The influence which the teeth are capable of exercising on the personal appearance is universally known and admitted. The teeth have formed especial objects of attention, in connection with the toilet and cosmetic arts, from almost the earliest ages of the world to the present time. History and tradition, and the researches of archæologists among the remains of the prehistoric periods of the nations of the East, show us that even dentistry may trace back its origin to a date not very long subsequent to the "confusion of tongues."

The ancient Egyptians, Assyrians, and Persians used artificial teeth, and were familiar with the use of gold and enamel for filling decayed ones. Descending to later, but still remote periods, we find that the ladies of ancient Sicily and Rome used both artificial teeth and "stopping," and that the polished Romans generally were liberal patrons of tooth-cosmetics.

Albucasis, the Arabian physician who flourished in the early part of the twelfth century, made artificial teeth of ox-bones. We are told that the ancient Welsh took particular care of their teeth, and kept them perfectly white by frequently rubbing them with a stick of green hazel and a woolen cloth. To prevent their premature decay, they scrupulously avoided acid liquids, and invariably abstained from all hot food and drink.

In olden times the removal of the teeth, or some of them, was occasionally ordered by way of persecution or punishment. It is said that King John once demanded ten thousand marks from a Jew at Bristol; and, on his refusal, ordered one of his teeth to be drawn every day until he should comply. The Jew lost seven teeth, and then paid the sum so unjustly demanded of him. Towards the end of the fifteenth century, one Matthew Flint, dentist, received from Richard III, a grant of sixpence per day on condition of his drawing the teeth of the poor of London gratuitously.

STAINING THE TEETH OF BOYS AND GIRLS.

Europeans pride themselves on teeth of pearly whiteness; but many Asiatic nations regard them as beautiful only when of a black color. The Chinese, in order to blacken them, chew what is popularly called "betel," or "betel-nut," a common masticatory in the East. The Siamese and the Tonquinese do the same, but to a still greater extent, which render their teeth as black as ebony, or more so. As the use of the masticatory is generally not commenced until a certain age, the common practice is to stain the teeth of boys and girls with a strong preparation of it, on the former attaining the age of ten or twelve, and the latter, twelve or fourteen. The process occupies three or four days, during which time they take only liquids, for fear of being poisoned by the stain or pigment if they swallowed food masticated by their newly-dyed teeth.

Every one in Siam and Tonquin undergoes this dyeing operation, as even the humblest and poorest regard it as a disgrace to grow up to manhood or womanhood with teeth as white as those of dogs, goats, and elephants. The Malays and Sumatrans commence chewing betel at an earlier age, which renders the above process of dyeing the teeth unnecessary. The ladies of Turkey, Persia, and other Oriental countries, frequently stain their teeth red or black, but in a simpler or more expeditious way than is practiced by the nations just referred to.

Of these it may be remarked, that the front teeth are framed for cutting or dividing; the canine teeth for seizing or tearing; and the back teeth for bruising or crushing. The short and but moderately strong jaws of man, in which they are set, do not admit of the ready mastication of herbage or raw grain, or the devouring of flesh that has not been previously prepared by cooking.

The development and structure of the teeth are singular and complicated:—

The first teeth, or milk teeth, beginning with the incisors, usually commence appearing a few months after birth, but occasionally earlier. Sometimes, though rarely, children are born with one or more of them. At two years, the whole of the deciduous teeth are cut. After the seventh year, these are gradually shed and replaced by others—the eight deciduous incisors being replaced by eight permanent ones; the four deciduous canine teeth, by four permanent ones; and the eight deciduous molars, by eight bycuspids or Præmolars. Of the twelve true or posterior molars, which are permanent, and not deciduous or replaced by other teeth, like those previously mentioned, there are four—one on each side of both jaws—that usually make their appearance at about four and a half years; four more at about nine years; the last four, between the sixteenth and eighteenth year, but frequently not until the twentieth year, and sometimes even later.

PERIOD OF TEETHING A TRYING ONE.

The period of dentition or teething is often a trying one to both the infant and the nurse, and particularly to the parents; but the trouble and danger attending it frequently arise and are very generally increased by improper treatment, or by the neglect of those matters which are at all times essential to health, and more especially so during infancy. At this time, excessive cleanliness, the use of warm, dry clothing, absolute freedom from tight bandages and pressure, with fresh air without undue exposure, and thorough ventilation without draughts, abundance of good nursing exercise and of "crawling on the carpet," and frequent warm baths, will be found more than usually advantageous.

Indeed, one of our highest medical authorities asserts that the last, without other treatment, are often sufficient to subdue the most distressing convulsions of this period, and the most obstinate diarrhœa; whilst in no case can they do harm, but only good. Above all things, the nursing mother, or wet-nurse, must be scrupulously regardful of her own health, always remembering that improper diet or indulgences, irregular habits, exposure, mental disquietude and the like, exert, through her, a baneful action on the infant, though she may suffer little from them herself. By attention to all these points, dentition will generally interfere but little with the health of the infant; strong and regular teeth

will be formed and the foundation laid for a beautiful and durable set in after-life.

During childhood and youth the teeth demand particular attention, as at this period they are very easily affected by violence, being meddled with and improper use, by which their beauty, regularity and strength may be permanently impaired. They are also liable, from these causes, nd some times without any apparent cause, to cross or press on each other, by which they are forced out of their natural positions, and grow unequal and irregular.

In such cases, dentists frequently insert ligatures or wedges of gold, platinum, silk or India-rubber, between the teeth, to cause them to grow equal and regular. Sometimes even a supernumerary tooth or two will spring up behind the regular set, forcing the tooth or teeth in front out of their places. Here the proper treatment is generally the removal of the "interloper" as soon as possible; but, if the tooth in front of it is feeble and much displaced, it is often better to remove it instead of the other; when the former, during growth, will gradually fill up the vacant position in the gum.

COMMON NEGLECT OF THE TEETH.

The preservation of the teeth is an object of the utmost importance; since, besides their immediate connection with the personal appearance, their integrity is highly subservient to health, owing to their use in preparing the food for the subsequent process of digestion. Unfortunately, the teeth are either wholly neglected or very improperly treated by the mass of mankind, and even those who are very attentive to their teeth, and who highly value their beauty, direct their effects mainly to rendering the front teeth white, because these are seen when we speak, smile or eat.

A thought respecting their permanent preservation scarcely arises until their decay commences and warns them of their approaching failure or loss. Yet the preservation of the teeth and the permanent promotion of their beauty are nearly synonymous terms. The subject deserves the serious consideration of every one.

The rational management of the teeth consists essentially in thorough cleanliness, and the avoidance, as much as possible, of the use of beverages, condiments and articles of food generally, that exert an injurious action on them, or on the gums. Among the substances referred to are all those of a sour, or acid, or corrosive nature—including acid piquant

sauces, pickles, sour fruits and preserves, salads seasoned with vinegar, and the like; to which also must be added medicines containing acids or acid-salts, or any salt in which a strong acid is united to a weak base. When such articles are eaten or taken, it is advisable either to clean the teeth, or to rinse the mouth with pure water as soon afterwards as possible.

The use of hot food and liquids is also very prejudicial to the teeth and gums; and this more so in youth and early maturity than in after life. Overtaxing the teeth, and frequently exerting them on hard, tough or gritty substances, or in biting substances so thin or slender that their cutting edges are brought into immediate contact and act on each other, are other practices which rapidly tend to injure them and wear them out. Allowing particles of animal or vegetable food to remain in the interstices of the teeth, or in cracks or hollows in them, is particularly objectionable; as the first, from the heat of the mouth, in a short time generate a rancid acrimony, and the other an acidity, which not merely render the breath offensive, but rapidly corrode the teeth. Such particles should be removed by the toothpick immediately after every meal.

BAD HABITS OF BREATHING.

Keeping the lips apart and breathing through the mouth, instead of the nose, and particularly sleeping with the mouth open, are habits which are very prejudicial to the teeth and gums. In this way the mouth forms a trap to catch the dust and gritty particles floating in the atmosphere, which soon mechanically injure the enamel of the teeth by attrition; the saliva, by the evaporation of its aqueous particles, becomes inspissated, and, by the action of the oxygen of the air, its ptyaline suffers decomposition, its natural alkalinity is lost, and it grows slightly acid and corrosive. Particles of matter accumulated around the necks and in the cracks and interstices of the teeth, from the same exposure, suffer rapid decomposition, tainting the breath as it passes through and over them.

Further, the membranes covering the gums and lining the lips, mouth and fauces, at the same time lose their natural delicacy and healthy character, growing unpleasantly parched and stiff; so that speech becomes difficult and imperfect until the parts are again lubricated with saliva by the action of the tongue. It is on this account that snuff-taking is so injurious to the teeth. Snuffers generally breathe through the mouth while awake, and uniformly do so when asleep. Besides which, snuffing acts injuriously by reducing the powers of the stomach.

The nostrils are the natural channels of respiration in man and in most other mammals. Breathing through the mouth, when avoidable, is therefore unnatural; and, being unnatural, must also be unfavorable to health. Besides exposing those who do so to many inconveniences, particularly increased liability to infectious diseases, it gives a more or less vacant expression to the features, which, in exaggerated cases, is sometimes almost idiotic.

On the subject of cleanliness in connection with the teeth and mouth, it may be said that the mouth cannot be too frequently rinsed during the day, and that it should be more particularly so treated after every meal. Pure cold water is the best for the purpose. It not only cleans the teeth and mouth, but exerts a tonic action on the gums, which warm water, or even tepid water, is deficient in. When cold water cannot be tolerated, tepid water may be employed, the temperature being slightly lowered once every week or ten days, until cold water can be borne.

ANTISEPTICS RECOMMENDED.

The addition of a few drops of spirit of camphor, or essence of camphor to the water thus employed, is highly serviceable; as camphor, by its antiseptic and anodyne properties, and its odor, tends to arrest decay, allay tenderness and pain, and correct the fœtor of the breath. Where convenience permits, it is advisable to clean the teeth night and morning, and after dinner, or the principal meal of the day, When, as is frequently the case with the great mass of mankind, the only opportunities of attending to the teeth are those at the morning toilet and before retiring to rest, these should be taken advantage of for that purpose.

At all events, every one who abhors a fœtid breath, rotten teeth, and the toothache, would do well to thoroughly clean his teeth at bedtime, observing to well rinse the mouth with cold water on rising in the morning, and again in the day once, or oftener, as the opportunities occur. With smokers, the use of the tooth-brush the last thing at night is almost obligatory if they value their teeth, and wish to avoid the unpleasant flavor and sensation which teeth fouled with tobacco-smoke occasion in the mouth on awaking in the morning.

The operation of cleaning the teeth, like all other operations of the toilet, should be carefully performed, and in as effective a manner as possible. The mode in which it is commonly done is worse than useless, and is not infrequently very injurious to the teeth and gums. To do it

well and thoroughly, the action of the tooth-brush should not be confined to the visible portion of the front teeth, but every portion of both the upper and under teeth, back and front, and on the inner as well as the outer sides, and the crowns, should receive attention. Without all this be done, the use of the brush can effect little in the way of thorough cleanliness, correction of the odor of the breath, and the preservation of the teeth.

Further, great care should be taken to avoid violence to the gums. If these bleed, or feel sore, real injury is done them by the operation, notwithstanding the assertions of certain interested dentists to the contrary. In such cases it will generally be found that the brush has been clumsily applied, or is of a coarse inferior quality, or that the tooth-powder, or other cosmetic used with the brush, is of an acrid or gritty nature.

RINSING THE MOUTH.

Personal attention to the teeth should commence in early life. As soon as the permanent teeth begin to appear, a child should be taught to rinse its teeth and mouth with water after every meal, or two or three times daily. In another twelvemonth or two years, or as soon as it is capable of properly using a tooth-brush, one should be given it, and at the same time it should be instructed in the mode of employing it, and the importance of doing so. A little later, and some simple tooth-powder may be added to its little collection of toilet requisites. Some watching, and further instruction may be necessary; but by the time early youth commences, attention to the teeth will have grown into a pleasurable habit which will cling to the individual for life.

As to tooth-powders or tooth-pastes to be used with the brush, little need be said here, as I shall revert to the subject again. The simplest are the best. Plain camphorated chalk, with or without a little finely powdered pumice-stone or burnt hartshorn, is a popular and excellent tooth-powder. It is capable of exerting sufficient friction under the brush to ensure pearly whiteness of the teeth without injuring the enamel; whilst the camphor in it tends to destroy the animalcula in the secretions of the month, whose skeletons or remains constitute, as we shall presently see, the incrustations popularly called "tartar" or "fur."

Powdered Castile-soap forms another simple tooth-powder which, besides other excellent qualities, perhaps exceeds all other substances in its powers of destroying the minute being just referred to, and removing

the tartar resulting from their presence. Recently burnt charcoal, in very fine powder, is another popular and excellent tooth-powder which, without injuring the enamel, is sufficiently gritty to clean the teeth and remove the tartar from them, and possesses the advantage of also removing the offensive odor arising from rotten teeth, and from decomposing organic matter.

The charcoal of the heavy, hard woods, as lignum vitæ, box-wood, oak, are the best; and these, as to quality, range in the order here given. Still more valuable, as a dentifrice, is areca-nut charcoal, which, besides possessing the properties of the other vegetable charcoals in an eminent degree, has invaluable ones peculiar to itself, as noticed in the following chapter: The substances and preparations mentioned above, or mixtures of them, variously oramatised and disguised, form the leading and more valuable portion of the advertised dentifrices now used in fashionable life.

SUBSTANCES TO BE AVOIDED.

Besides tooth-powders and tooth-pastes, which are used with the tooth-brush, there are other preparations which are employed as tooth-cosmetics and mouth-cosmetics.

In the choice of tooth-cosmetics the greatest care should be taken to avoid those which contain gritty, acrid, or irritating substances, as the two first act injuriously on the teeth, and the last, on the gums.

Some dentists, and some persons in imitation of them, in order to whiten the teeth, rub their surfaces with hydrochloric acid, somewhat dilute; but the practice is a most dangerous one, which, by a few repetitions, will sometimes utterly destroy the enamel, and lead to the rapid decay of all the teeth so treated. Should the teeth be much discolored, and ordinary tooth-powder prove ineffective, a little lemon-juice, used with the brush, will generally render them perfectly white. It should only be employed occasionally, and the mouth should be well rinsed with water immediately afterwards.

A little of the pulp of an orange, used in the same way, is also very effective and safe; as are also ripe strawberries, which may be either rubbed on the teeth with the fingers, or applied with the brush. The last form, perhaps, the very best natural dentifrice known. Besides possessing singular power in whitening and cleaning the teeth, and rapidly removing tartar, they destroy the offensive odor of rotten teeth, and

impart an agreeable fragrance to the breath. Oranges and strawberries are also useful in removing fur from the tongue.

The importance of a judicious attention to the teeth, in connection with health, cleanliness, and personal comfort and appearance, cannot be too often alluded to and enforced. Yet, notwithstanding its importance, there is, perhaps, no part of our toilet duties which are so generally neglected, or so carelessly performed, as those relating to the teeth.

The consequences of the careless performance, or the neglect, of this really necessary personal duty, are not long in being developed. Passing over the degradation of the other features, the offensiveness of the breath, often to a degree which renders the individual uncompanionable, and the unfavorable impression which, like other marks of uncleanliness, they convey of the taste and habits of their possessor, as the immediate effects of habitually neglected and dirty teeth, let us look at the more distant, but not less certain ones:—

CAUSES OF PREMATURE DECAY.

It is a well-known fact that dirty teeth are very liable to premature decay. The decomposing animal and vegetable matter accumulated between and about them, and particularly around the necks or throats, rapidly corrodes them, and gradually impairs their vitality. The enamel suffers. It becomes brittle, cracks, and here and there chips off, exposing the inner portion of the tooth, in which decay immediately commences. The edges of the incisors, and the points and tubercles in the crowns of the molars, gradually give way, by which the former teeth lose their efficiency as cutters, and the latter as grinders.

The gums suffer, lose their adhesion, and shrink back, exposing the necks of the teeth to every unfavorable influence. Minute cracks in the enamel widen into fissures, and places where it is chipped or worn off become unpleasantly rough or scratchy to the tongue. The depressions in the crowns of the teeth grow deeper and deeper, as if the parts were contracting or shrinking on themselves. Soon caries in one or more of the teeth actively sets in, there is rapid loss of substance, the nerve becomes exposed to the air and cold, violent twinges of toothache follow, attention is directed to the parts, and surprise is expressed at the discovery of a hollow or rotten tooth.

The same thing occurs after a time with another tooth; and again, at intervals, until several are destroyed or rendered useless. A few years

later, and several teeth are probably missing—some have been removed by the dentist—others have crumbled away or broken off, and, perhaps, only their stumps remain, to be sources of pain and annoyance on every subsequent exposure to cold or attack of a fit of dyspepsia. In another five or six years, more are missing or have become useless, whilst those remaining have probably grown so weak and defective that thorough mastication of solid food is impossible.

Bad teeth and defective sets of teeth, owing to the resulting inability to properly masticate the food, are fertile causes of dyspepsia or indigestion, heartburn, diarrhœa, worms, and the like. So, on the other hand, dyspepsia, and some other affections of the stomach, frequently occasion toothache and premature decay of the teeth.

WHAT IS SEEN UNDER THE MICROSCOPE.

As a further incentive to cleanliness and care of the teeth and mouth, it may be added, that the mucus of the mouth commonly contains those microscopic creatures known as infusorial animalcula, and that, when foul, it is crowded with millions of them. Leuwenhoek was the first to announce this fact, which has since been confirmed by M. Mandl and others.

Mr. Mandl further discovered that the fur or foul adhesive mucus of the tongue, and the tartar, fur, or greenish incrustation of the teeth, consist of the skeletons or dead remains of these minute beings compactly united into one mass by chemical decomposition. These animalcula are most observable in the mouths of persons who neglect their teeth, and who live on a spare diet, or eat putrescible articles of food, or are in bad health.

Independently of the direct action on the teeth exerted by substances taken by the mouth, before noticed, the nature of our food, through the functions of nutrition, has much to do with their beauty, strength, and durability. This is particularly the case during the whole period of their development and growth. The mineral constituents of the teeth are essentially identical with those of the bones. It is therefore evident, that, if a sufficiency of bone-matter be not contained in our food, the teeth will be ill-developed and feeble.

Children and youth brought up on brown bread have almost uniformly good teeth, and retain them to a late period of life.

The popular notion, that sugar and sweets injure the teeth, is, like

many other popular notions, incorrect. On the contrary, pure sugar and confections whiten and preserve the teeth. "Let those who believe the former unfounded assertion visit the sugar-plantations, and look at the negroes and their children, whose teeth are daily employed in the mastication of sugar, and they will be convinced of the absurdity of the statement." Dr. Willis, many years ago, having given the sanction of his name to the popular opinion respecting the corrosive action of sugar on the teeth, Dr. Slare disproved the notion by reference to his grandfather, who had all his life consumed enormous quantities of sugar daily.

This gentleman was in the habit of eating it, spread upon his bread and butter, at breakfast. When eighty years of age, he had all his teeth strong and firm, could crunch the hardest crust, and was free from all pain and soreness of the gums. In his eighty-second year one of his teeth dropped out, and soon after that he lost another, which was one of his front teeth. In the following two or three years all his teeth dropped out; but, what was more remarkable, they were replaced by the growth of a perfectly new and useful set.

PURE SUGAR AND SWEETS.

His hair was at that time quite white, but it now became somewhat dark. He continued to enjoy good health and strength until his death, which happened in the ninety-ninth year of his age." This is undoubtedly, a most extraordinary case; but numerous later authorities, of the highest eminence, might be quoted to show the innocuousness of pure sugar and sweets, in reference to the teeth, and even their preservative action on them. The practice of crunching dry lump-sugar, or crystallized sugar, between the teeth, as is done by some persons, is, however, objectionable; since, owing to its greediness for moisture, it so rapidly deprives the crowns of the teeth, and the gums surrounding their necks, of the saliva that lubricates them, as to cause unnatural dryness and even pain.

Sugar, in the solid form, should be sucked, not chewed. The use of sour, or even aciduous sweetmeats, or those containing acrid substances, should also be avoided; for the former attack the enamel of the teeth, and the latter injuriously affect the gums.

Cracks or fissures in the teeth, defects in the enamel, and voids or hollows, resulting from caries or rottenness, should be filled up, or "stopped," as it is usually called, with gold, mineral marmoratum, or

some other good cement or "stopping," as soon as possible after they become perceptible. For this purpose the services of a respectable dentist should be called in. Teeth that are useless and constant sources of pain, from the defects just mentioned, may be thus rendered again serviceable, and will generally remain so for many years.

Lost teeth, when it is practicable, should be replaced by effective artificial ones, care being taken to employ some respectable and skilful dentist to supply the latter. Cheap advertising dentists should be carefully avoided, since, in general, they are imposing and clumsy pretenders to their art.

Every tooth is divided into three parts. As already stated, the body, or portion projecting from the gum and covered with the enamel; the root or fang, which is received into the socket; and the neck, which connects the body and fang together. The body of the tooth contains a central cavity, that extends into the fang or root, which is the seat of sensation and nutriment.

STRUCTURE OF THE TEETH.

The first teeth are called "deciduous," or milk teeth, and are twenty in number, ten upon each jaw.

The second teeth are called "permanent" teeth, and consists of thirty-two, or sixteen upon each jaw.

The structure of the deciduous and permanent teeth are the same, and composed of three distinct parts, viz.: dental, enamel, and cement.

DENTAL.—This substance is called the ivory of the tooth and enters into the formation of the greater part of the body and fangs. It is of a yellowish color and of fibrous structure, which fibres are tubular. These fibres are too small to contain blood-vessels, but are filled with a fluid, having the appearance of blood serum, which is the nourishing principle of the tooth.

ENAMEL.—This covers the grinding surface and the body of the tooth. It gradually tapers to an edge near the gum—is white, brittle, and extremely hard, consisting of solid fibres of an hexagonal form.

CEMENT.—This covers the surface of the teeth not invested by the enamel. It has the character of true bone and contains the same chemical constituents.

Each tooth fits into a bony socket so firmly as not to admit of motion in the healthy condition, and surrounded by a delicate and vascu-

lar membrane called the periosteum. The teeth of the upper and lower jaws are supplied by their respective arteries and nerves, which pass into the cavity of the tooth at the lower part of the root.

The germs of the permanent teeth may be traced in the jaw at birth, on the inner side of the deciduous teeth. These sacs are nourished by the same vessels as the milk teeth. A curious connection exists between the two sets of teeth. A cord passes from the sac of the permanent to that of the deciduous tooth. This was formerly supposed to give direction to the tooth. According to Dr. Thomas Bell, the sac of the deciduous tooth gives off a bud or shoot which subsequently becomes the permanent tooth. The cord-like appendage, therefore, is merely the connection existing between the offshoot and the parent tooth. It becomes gradually atrophied as the permanent tooth develops, and finally appears as a mere thread.

The development of the permanent teeth causes the absorption of the deciduous teeth, so that the fangs entirely disappear, or are only retained within the socket of the jaw by a small portion of the gum that surrounds the body of the tooth.

CAUSE OF TOOTHACHE.

When a tooth commences to decay, it is upon the external surface, gradually extending toward the internal parts of the tooth. If no effort is made to arrest the decay, the destruction of the tooth proceeds rapidly on toward the internal cavity, while the exposure of the pulp or nerve causes the toothache. When a tooth commences to decay, it should be examined by a dentist, and the decayed part removed and the cavity filled with gold, or with dentists' cement.

The decay of teeth is often hereditary. This might be avoided, in many instances, by proper attention to them in childhood. After the first teeth make their appearance, care should be taken to keep them in a cleanly condition. The mouth of the child should be washed once or twice a day with a linen rag saturated with cold water, while the first appearance of decay should be attended to at once by a dentist.

Some mothers are exceedingly anxious for their children to present an attractive appearance, and will spend several hours a day in dressing and curling their hair, while they appear totally indifferent about the teeth. What is more offensive than decayed or blackened teeth in a child or female? It presents a more unseemly appearance than uncombed

hair or tattered garments. When a child becomes old enough, it should be taught to use and made to employ a tooth-brush, night and morning; while a piece of floss-silk should also be passed between the teeth after every cleansing. This will prevent the tartar from forming.

Children's teeth, when they are undergoing decay, sometimes cause intense pain to the individual. When such is the case, dissolve four parts of mastic in one part of ether, in a well-stopped bottle. With this solution, which is of an oily consistency, saturate a piece of cotton-wool and press it into the cavity of the tooth. The ether soon evaporates, and the mastic forms a coating to the diseased surface and protects it from the air and food. Children's teeth should not be removed, even if they are decayed, unless they are loose and creating mischief, because of the existing connection between them and the permanent teeth, inducing them to assume an irregular position.

COMMENCEMENT OF SECOND SET.

At from five to seven years of age, it will be observed that the arch of the jaw elongates posteriorly, and that an entirely new double tooth has taken up a position behind the last double one of the first set. This occurs on the upper and lower jaw, and upon both sides, and is indicative of the commencement of the second set. Spaces may also be noticed between all the teeth, showing that the arch of the jaw is expanding for the reception of the second supply of teeth, which teeth are much larger than those of the first set.

When the double teeth make their first appearance, the front ones of the first set become loose, and should be at once removed, in order to prevent the second set from being crooked or having a wrong direction. This changing of teeth continues until about the twelfth year, when all the teeth of the first set will be superseded by new ones. At from twelve to fourteen years, another double tooth will appear in the rear of the arch on both sides, upper and lower, when there is seemingly a pause or suspension of their growth until the sixteenth year. From that time until the twenty-fourth year, and sometimes later, the wisdom teeth make their appearance. Thus we find that there are three important facts to be borne in mind in regard to children's teeth, viz.:

1. The first teeth should not be removed too soon.
2. They should be removed when the others have appeared, and are interfering with them.

3. Whenever a new tooth has not sufficient space to assume a regular position, a dentist should be consulted.

The children's teeth should be examined every sixth month during the shedding of old and and the development of new ones, in order to keep the latter regular, clean and sound. The advice already given, if attended to, will not only preserve the first teeth, but assist materially the beauty of the permanent ones.

Every individual can do much toward the preservation of the teeth. The principal means to this end is to keep them clean. To do this properly, they should be well brushed inside and out and on the surface, night and morning; while the interstices between them should be manipulated by using a linen or silk thread, so as to prevent articles of food from accumulating about them, thus inducing their decay and a fetid breath. The tooth-brush should be rather hard, but not too wide; while the bristles should be reasonably loose, pliable and elastic. Should the brush be even hard enough to produce slight bleeding of the gums, it will not prove prejudicial.

USE OF TOOTH POWDER.

Tooth powder should be used once a day, in the morning in preference to the evening, inasmuch as the teeth during the night are more liable to become coated with impurities. The utmost care must be observed in selecting a proper tooth-powder. Some of those that are highly recommended contain certain acids, which will injure the teeth if not utterly destroy them. The tooth-powder should be composed only of such ingredients that will exert a cleansing effect and preserve the healthiness of the gums.

When the tooth-brush is properly used twice a day with cold water, it will generally be sufficient to cleanse the teeth and prevent the tartar from forming. Castile soap is easily procured, and will prove an excellent means to neutralize any acid secretion, remove tartar, clean the teeth, and purify the breath.

Rinse the mouth with cold water after every meal. The tooth-pick should not be of metal, but made of a piece of wood or a quill, not omitting to pass a silk or linen thread between each tooth, as before directed, daily.

During an attack of fever the teeth are very liable to decay. They should therefore be the more frequently cleansed every day. Always

rinse the mouth after taking medicine to prevent its injurious action upon the teeth. Sometimes mercury is given to produce salivation; the teeth become tender to the touch, the gums inflamed, and the breath offensive. It also makes the teeth more liable to decay.

In case the patient should become salivated, the mouth ought then be rinsed frequently with tincture of myrrh and chloride of potash. One or two grains of the chlorate of potash may be taken internally three or four times a day. This is said to be a specific for salivation. Sulphur is also a preventive of salivation. It may be given in small doses, if the other should not answer the purpose.

As before remarked, frequent examinations by a dentist, and the utmost care to keep the teeth clean, can alone prevent their decay, and avoid much pain and anxiety concomitant of defects and impurities.

TREATMENT OF THE GUMS.

The gums are liable to disease, and produce by consequence much suffering and trouble. They first become inflamed, swollen and congested with blood. Sometimes the edges become thickened and upon pressure discharge matter. They are also sensitive and bleed freely. If this condition be not arrested, the disease will extend to the sockets and affect the teeth, causing suppuration, so that they become loose and drop out. This affection of the gums is generally called scurvy, and is principally occasioned by the accumulation of tartar upon the teeth. The same condition may result from disease, or decay of the roots of the teeth, or from the improper use of mercury.

Treatment.—First remove the cause of irritation. Should it be tartar, have it removed. If a decayed tooth, have it extracted. If it be mercury, abandon its use, and resort to the remedies already mentioned.

When the cause is removed and the gums continue much inflamed, leeches should be applied; or the gums may be scarified and warm water held in the mouth to induce or promote bleeding. After this, use some astringent wash. A very good one is as follows:—Take a pound of the inner bark of white oak, add three quarts of boiling water, and boil it down to a quart; strain and wash the gums several times a day with the preparation.

Structure of the Skin.—The skin consists of several distinct layers, and serves several important purposes in the animal economy.

1st. It affords a complete covering and protection to sensitive nerves.

2nd. It affords a large exhalant surface for the elimination of effete fluids from the blood.

3rd. It possesses inhalant apparatus by which fluids may be absorbed.

4th. It prevents the too rapid evaporation of the fluids of the body.

Epidermis, or Cuticle.—This is the outer layer of the skin, and invests the entire surface of the body. It consists of cells arranged in layers—those nearest the surface being dry and consisting of mere scales. It is insensible and unvascular, there being no nerves or blood-vessels found in it. It receives its nourishment from the basement membrane lying beneath. As new cells form, the others are pressed up and become dry and are thrown off in the form of scurf. Hence there is more or less scurf continually thrown off from the skin, which, if not eliminated, would clog up the pores of which the skin is supplied, and thus prevent the evaporation of effete matter from the blood. From this fact, we perceive the necessity of keeping the surface of the skin perfectly clean if we wish to maintain health and a healthy appearance of the body's surface.

MAIN OBJECT OF TREATING BURNS.

In blistering, scalds and burns, the outer surface of the skin or epidermis is destroyed and stripped off, which leaves the sensitive surface exposed to the oxygen of the air, causing pain. The main object in treating burns should be to form an artificial cuticle to protect this delicate surface.

One of the best remedies that can be applied, is by saturating raw cotton with one part of chloroform or ether, and two parts of sweet oil. The oil prevents the absorption of oxygen, while the chloroform or ether removes the pain. Flour mixed with water, in the form of paste, and applied, will also answer a good purpose. The white of eggs covered with oil-silk, will likewise afford an artificial cuticle. Carbonic acid applied to a burned surface, will immediately remove the pain.

The use of the epidermis is to protect the sensitive surface; to prevent a too rapid dissipation of caloric; and to prevent a too rapid evaporation of the fluids of the body. The color of the different races is depending upon a pigment that is deposited in the second layer of the skin, which become mingled with the epidermic cells.

In the negro they are of a dark black color, while in the white races they are almost entirely wanting, excepting in freckles, when they are

observed of a lightish hue. By blistering the skin of a negro it becomes nearly the color of the white person, but the pigment soon forms again.

Sudoriferous Glands.—These are also called the sweat glands. They consist of tubes with open mouths upon the surface of the epidermis, and extend through the three layers of skin to the sub-cutaneous tissue below.

According to Wilson, 2,800 of them are formed in a single square inch, and, when straightened, each tube is about a quarter of an inch in length. The number of square inches in a man of ordinary stature is estimated at 2,500. Accordingly, the total number of pores must be 7,000,000, and the length of tubing 1,750,000 inches, or 145,833 feet, or 48,611 yards, or twenty-eight miles.

PERSPIRATION ACCORDING TO WEATHER.

The fluid passing off from these glands is usually in the form of vapor, and is called "insensible perspiration." When it is more profuse it appears in drops, and is then called "sensible perspiration." It usually contains lactic acid, which gives the perspiration, when it is profuse, a sour smell. There are about twelve parts only in 1,000 of solid matter—the balance consists of water. The amount passing off in the shape of insensible perspiration, has been estimated at eleven grains per minute. Perspiration is wonderfully modified by the condition of the atmosphere. When the weather is dry and hot it is quite profuse; when it is warm and moist the perspiration is less, and when the weather is still colder the moisture of the skin is diminished in proportion to the degree of the thermal changes.

Sebaceous Glands.—These are distinct from the sudorific glands—the former being more abundant where the latter are the least abundant, and *vice versa*. They are absent on the soles of the feet and palms of hands, and numerous on the face, scalp, etc. They are little crypts or sacs, imbedded in the *cutis vera*, or true skin. Sometimes there are several of these clustered around a duct, into which they open. Sometimes the ducts of these glands perform a double function, forming a sheath for the hair, and outlet for their glands.

These glands (the sebaceous) secretes an oleaginous substance, which serves to keep the skin smooth and pliable, and to prevent it from becoming dry and cracked by the action of heat, etc. The secretion is found more abundant in those who inhabit warm climates, and with those whose occupations subject them to high temperatures.

The function of the skin has already been explained, while the importance of keeping it clean and in a healthy condition, as an Element of Female Beauty, has likewise been demonstrated.

As I have already intimated, a bright, clear complexion, is only to be acquired by three things—temperance, exercise, and cleanliness. If these are not maintained, all the cosmetics in the world will be of no avail whatever.

Were a young lady as fair as Hebe or charming as Venus, she will speedily mar the most exquisite and voluptuous loveliness by too high living and late hours. As to diet—strong coffee, hot cakes and butter; rich peppered soups; fish, sweet-meats, etc., have destroyed many a constitution, driven the roses from the cheeks and suffused the countenance with a saffron or bilious hue.

There are a great many disorders induced by ignorance, connected with fashion and habit. Besides these, the frequent changes of the weather, or the sudden transition from cold to heat, and heat to cold, have a sad effect upon the skin, roughening its texture, injuring its hue and deforming it with unseemly eruptions. The head and face, especially need protection from the atmosphere. Nor should any lady ever go out into the hot sun without her veil, or without her having her head properly covered. Going out in the autumnal evening without a sufficient covering to the head, particularly, is exceedingly detrimental to the beauty of complexion.

The custom of drying the perspiration from the face by powdering it, or cooling it when hot from exposure to sun or dancing, by washing with cold water, is most destructive to the softness and brilliancy of the complexion. The exercise of a little judgment would teach every lady that when she is over-heated, she ought to permit herself to cool gradually and by all means to avoid going into the air, or allowing a draught through an open window or door to blow upon her when thus heated. Excessive heat is as bad as is excessive cold for the complexion. In the dingy face of the desert-wandering gypsy, may be seen the effects of exposure to alternate heats and colds. Let all young women, especially, attend to the few rules we have already laid down, and each will then be able to retain her health and beauty to the latest period of life.

THE HEAD AND FACE.

CHAPTER XXXVI.

WOMAN'S large capacity of the skull or brain-case, and particularly of its anterior portion, forms the distinguishing characteristics and beauty of the human head. In the same ratio as the forehead recedes, and the jaws protrude, intellectual development diminishes, and, beyond a certain limit, beauty and reason disappear. But here it may be remarked, that it is not merely on the full development of the forehead that the highest degrees of beauty and excellence in the human head depend—the several parts, including those which we possess in common with other animals, must be duly balanced and proportioned to each other. Without this, the intellect and moral feelings lose much of their value, since the activity, energy, and decision of character, necessary for their direction and useful application, will be either wholly absent or defective.

The natural development and shape of the head should never be interfered with. Attempts to modify them in infancy and childhood, by pressure and mechanical means, are now wholly confined to savage tribes. Beyond promoting the development of the brain, by the cultivation of the nobler sentiments and affections of our nature, and the gradual expansion of the intellect, nothing should be attempted.

The practice, common among ignorant nurses and mothers, of pressing together the unossified sutures or soft edges of the bones of the skull, for the purpose of "closing them," as they call it, has long been condemned by the medical faculty, as not merely useless for the object it is intended to effect, but as a fertile source of fits, idiocy, hydrocephalus (water-on-the-brain), and other dangerous and often fatal cerebral affections resulting from pressure and violence.

The possession of an elevated and prominent forehead is correctly regarded as one of the distinguishing features of the human race. Its

erectness and extent are characteristic of reason and high intellectual powers, and its development is exactly proportionate to the intelligence of the species and of the individual. A lofty, ample forehead is the attribute of the enlightened white race; a receding forehead, that of the Negro. Beyond a certain limit reason disappears, and idiocy commences. The absence of a true forehead is one of the characteristics of the brute creation. Its excellence is an important ingredient in personal beauty, and is absolutely necessary to the possession of a superior mind.

The beauty of the face depends chiefly on all its several features being pleasingly moulded and in "perfect keeping" with each other. Without this proportion between the individual features, the most delicate complexion, the brightest eyes, the softest checks, the finely-moulded mouth, and the ruddiest lips, may fail to charm, and, by contrast, may even disfigure where they should adorn. It is this excellence of proportion that constitutes one of the chief elements of personal beauty.

ERUPTIONS ON THE FOREHEAD.

The forehead is occasionally affected with eruptions, among which the small, hard, distinct pimples, called "acne," deserve particular notice. They are regarded by the medical faculty as always symptomatic of a debilitated, and frequently of a ruined constitution, and are generally observed in the forehead of those who have prematurely rushed into enjoyment and excess, or who indulge in secret vice. "Like the brand of Cain," observes a recent eminent writer, "they may be said to be placed upon the brow as the mark of the victim who has violated the natural laws." When numerous, or persistent, they can only be permanently removed by avoiding the habits which have occasioned them, and by restoring the general health.

The forehead is more subject to be marked with wrinkles than the other portions of the face. They are the common result of emaciation and decay; and are hence also the usual accompaniments of declining life.

Persons who are moderately stout or fat, and at the same time healthy, are little subject to wrinkles. Indeed, it is proverbial, that such persons have generally the sleekest skins.

The toilet of the forehead is limited chiefly to the arrangement of the hair. The possessor of a beautiful forehead is seldom disposed to conceal any portion of it, or to modify its apparent form by such means.

The practice of wearing the hair over portions of the forehead naturally bare is prejudicial to the health of the head, and to the vigor of the mind. The contrary practice of throwing or fixing the hair in unnatural positions, backward from the forehead, is equally objectionable. The defects of an ill-formed forehead may, in general, be rendered less apparent, and often wholly obscured, by an appropriate arrangement of the hair about it—a matter in which the taste of the individual, and the example of others, will be the best guides.

The eyes, of all the features, stand pre-eminent for their beauty and ever-varying powers of expression, and for being the organs of the most exalted, delicate, and useful of the senses. It is they alone, that reveal the external forms of beauty to the mind, and enable it to perceive them, even at a distance, with the lightning speed of light. It is they alone that clothe the whole creation with the magic charms of color, and fix on every object the identity of figure. It is the eyes alone, or chiefly that reveal the emotions of the mind to others, and that clothe the features with the language of the soul.

FACIAL EXPRESSION AND CHARMS.

Melting with pity, or glowing with hope, or redolent with love, benevolence, desire, or emulation, they impart to the countenance those vital fascinations which are the peculiar attributes of man. And when the mind is subdued by fear, anxiety, or shame, or overwhelmed with sorrow or despair, the eyes, like faithful chroniclers, still tell the truthful story of the mental disquietude. And hatred, anger, envy, pride, and jealousy, ambition, avarice, discontent, and all the varied passions and emotions that torment, excite, or depress the human soul, and find a resting place in the human breast, obtain expression in the eyes. At one moment the instruments of receiving and imparting pleasure, at another the willing or passive instruments of pain, their influence and changes are as varied and boundless as the empire of thought itself.

Through their silent expressions the mind reveals its workings to the external world in signs more rapid and as palpable as those uttered by the tongue. It is the eyes alone that stamp the face with the outward symbol of animation and vitality, and which endue it with the visible "sanctity of reason." The eye is, indeed, the chief and most "speaking" feature of the face, and the one on whose excellence, more than any other, its beauty depends.

The beauty and expression of the human eye have furnished themes for both poets and prose-writers in all ages. Sculptors and painters have bestowed their highest skill and most laborious efforts on its delineation, and anatomists and physiologists have investigated and described its wonderful structure and functions with a degree of zeal and eloquence perhaps greater than that devoted to any other organ.

Physiognomists tell us that the peculiar form, size, and expression of the eyes, afford reliable indications of the disposition and the mental character of the individual; whilst the phrenologist assumes, among other things connected with these organs and the parts adjacent to them, that prominent eyes indicate the presence of the organ of language, and that their possessor will never be at a loss to express his thoughts in words.

MEANING OF THE EYE COLORS.

Theories have been based on even the particular "color of the eyes." Thus, it is said, that dark blue eyes are found chiefly in persons of delicate, refined, or effeminate mental character; light blue eyes, and more particularly gray eyes, in the hardy and active; hazel eyes in the masculine, vigorous, and profound; black eyes in those whose energy is of a desultory or remittent character, and who exhibit fickleness in pursuits and affection; greenish eyes, it is asserted, have the same general meaning as gray eyes, with the addition of selfishness, or a sinistrous disposition. These statements, however, though based on some general truths, and supported by popular opinion, are liable to so many exceptions as to be unreliable, and valueless, in their individual applications.

Shakespeare is said to have had hazel eyes; Swift, blue eyes; Milton, Scott, and Byron, gray eyes; Wellington and Napoleon are also said to have had gray eyes.

Much poetry, too, and high-art skill have been expended on the tears, and deservedly. Tears are only formed when the fluid that lubricates the eye is secreted in excess; as it is under mental emotion, pain, irritation, etc. "It is stated, that a certain distinguished lady, after expatiating, for some time, on the incomparable beauty of a tear, pressed one of our most eminent professors of chemistry for his opinion on the subject; to which the professor replied:—"They are, indeed, very interesting; they consist of pure water, holding in solution one per cent. of solid matter, which I find is chiefly albumen and common salt, with a mere trace of

phosphate of soda." The matter-of-fact professor took a scientific veiw of the subject; the lady, a poetical one.

It has been observed that vision is less acute in man than in many other animals, particularly birds. In woman, however, the two eyes are directed forward; and thus, though she does not see on two sides at once, like many quadrupeds, her vision is more truly binocular in the same direction, there is more unity in the result of it, and she can concentrate her attention more closely on the objects of her regard or scrutiny.

She may not be capable, like nocturnal and feline animals, and most of the herbivora, of seeing in comparative darkness; nor, like the eagle and some other birds, of facing the full blaze of the sun's rays; but she enjoys the faculty of useful natural vision during a greater period of each day, and under a greater variety of circumstances, than any of them, whilst her reason and inventive powers enable her, by artificial means, to assist or to protect her eyes at will, in a manner that causes them to surpass those of every other species of animal in their respective visual peculiarities and excellence.

WHAT FORMS A BEAUTIFUL EYE.

A beautiful eye is one that is full, clear, and brilliant, appropriate in color to the complexion, and in form, to the features, and of which the connected parts—the eyelids, eyelashes, and eyebrows, which, with it, in a general view of the subject, collectively form the external eye—are also beautiful, and in keeping with it.

The management of the eyes, in connection with the toilet, consists chiefly in daily bathing or washing them with pure water, and the avoidance of friction or pressure, exposure to dust, irritating fumes, or vivid light, and fatiguing, straining, or overtasking them. In washing them, and subsequently wiping them, the utmost delicacy should be exercised. Strong soap should be particularly avoided, and only a soft napkin should be employed to wipe them.

The use of a thick, stiff, or coarse towel, for the last purpose, is very injurious to them, as it tends to flatten them, and hastens the arrival of the time when the assistance of spectacles becomes necessary. Rubbing the eyes with the fingers when drowsy, especially on awaking in the morning, has a like tendency, and is even more injurious.

To strengthen the eyes, to relieve them when fatigued or stiff, or weak, irritable or inflamed, or swollen or congested, and to remove

chronic ophthalmia, purulent discharges, etc., nothing is equal to frequently bathing them with water, at first tepid, but afterwards gradually lowered in temperature to absolute coldness.

The eyes, like the other organs, suffer changes and functional decay by age, improper treatment, and excessive use. They are also injured by many of the violations of the natural laws that accompany modern civilization. Among the last, those that affect the nervous system are the most injurious to the eyes. Dissipation, and the habitual use of narcotics—miscalled stimulants—are particularly so. Persons in health, with a brain and nervous system unclouded and undepressed by artificial habits and the use of narcotics, are those that usually possess the best sight, and that retain it unimpaired the longest.

On the common defects called "long sight," "short sight," and "weak sight," a few words may be said here.

PECULIARITIES OF SIGHT.

In long sight near objects are indistinctly seen, whilst remote ones are more readily perceived. This arises from the crystalline lens of the eye, after about the age of thirty, gradually acquiring greater density and flatness, and also from the gradual flattening of the transparent, horny membrane which forms the front part of the eyeball, and called by anatomists the "cornea." The extremely long sight of the aged depends chiefly on the last. Rubbing the eyes, and pressure on them, tends, as already mentioned, to produce or increase long sight.

Short sight is said generally to arise from the central portion of the crystalline humor being denser than the other portions; but it probably more frequently arises from excessive convexity of the eyeball.

Both the above defects may be remedied by the use of appropriate spectacles or eye-glasses. Those formed of double-convex lenses, are employed to assist "long sight;" and those formed of lenses very slightly concave, or preferably, of convexo-concave lenses, for "short sight." Pantoscopic spectacles, or those in which the upper portion of each lens, to the extent of about one-third of the vertical diameter, is ground away, have the advantage of allowing the wearer to look through them at near objects, and over them at distant ones, by which the necessity of their removal is rendered less frequent, and fatigue of the eye avoided.

Weak sight, when not arising from organic lesion, or any derangement of the optical apparatus of the eye, may generally be more or less

relieved by the use of the spectacles of weak magnifying power, popularly called "preservers."

The lenses of spectacles and reading-glasses, to be permanently useful, and not injurious to the eyes, should be accurately ground, so that the sphericity of each of their surfaces be equal in all its parts; and the glass or pebble of which they are formed should be highly polished, perfectly clear, and perfectly free from streaks. bubbles, or other like defects. Without all these points are combined in them, vision through them will be imperfect, and the eyes gradually but seriously injured by them.

It is advisable to use glasses of the lowest power capable of effecting the desired object satisfactorily, and to replace them with stronger ones only as age or circumstances render it necessary. As the focal length of the two eyes is very frequently unequal, it is also proper to employ an appropriate lens for each, and not two lenses of equal power.

VARIOUS DEFECTS OF VISION.

Astigmatism, and other rare defects of vision, of which the precise nature is with difficulty detectable, and in which common lenses are useless, may be relieved by the use of others of appropriate forms, which the skilled professional observer will point out.

Defective sight, particularly short sight, often leads to awkward actions and a strangeness of deportment, which, by attracting the notice of the observer, are detrimental to the influence of the personal charms. When this is the case, it is due to ourselves, as well as to those around us, to endeavor to remedy the defect by the use of glasses, or by any other means.

The following means of preserving and restoring the sight, which has for some time been going the round of the periodical press, being really based on scientific principles, may be appropriately inserted here:—

For near-sightedness, close the eyes and pass the fingers, very gently, several times across them outward, from the canthus, or corner next the nose, towards the temple. This tends slightly to flatten the cornea and lens of the eye, and thus to lengthen or extend the angle of vision. The operation should be repeated several times a day, or at least always after making one's toilet, until short-sightedness is nearly or completely removed.

For long sight, loss of sight by age, weak sight, and generally for all those defects which require the use of magnifying glasses, gently pass

the finger, or napkin, from the outer angle or corner of the eyes inward, above and below the eyeball, towards the nose. This tends slightly to "round up" the eyes, and thus to preserve or restore the sight. It should be done every time the eyes are washed, or oftener.

It is said that many persons, by this last means, have preserved their sight, so as to read very small print, at eighty years of age; and that others, whose sight had been impaired by age or excessive use, have, in like manner, restored their sight and been able to dispense with the use of glasses, and have since preserved it by a daily continuance of the practice. It must be remembered, however, that, to be successful or safe, great gentleness and caution must be observed. Violence, or rough pressure, must be carefully avoided.

Short sight, arising from abnormal density of the central portion of the crystalline humor, is often materially lessened by rubbing the forehead, immediately above the eyebrows, with strong tincture of ginger or capsicum, essence of ginger, or by applying the same to the temples, near the eyes. Weak sight, and swollen eyes, arising from excessive use or fatigue, may also often be relieved in the same way.

CURE FOR SQUINTING.

Squinting—"strabismus" of medical writers—when not depending on any organic peculiarity, is commonly acquired in childhood by silly efforts to look singular, or by imitating others. When one eye only is affected, it is recommended to blindfold the sound eye for several hours daily, until the affection be removed. When both eyes are affected, a projecting piece of pasteboard, in the line of the nose, worn for several hours daily, will generally effect a cure. In bad cases of "squinting inwards, as it is called, the division of the internal rectus muscle of the eyeball—an operation that must be performed by a skilful surgeon—is said often to relieve the deformity.

Of diseases of the eyes only two or three can be usefully noticed here:

Inflammation of the eye—"ophthalmia" or "ophthalmitis" of medical writers—in ordinary cases is confined to the external membrane of the eyeball, or to the eyelids; but it occasionally attacks deeper-seated portions of the eye, and assumes a corresponding serious character. The common causes of ordinary or conjunctival ophthalmia are exposure of the organ to cold, drying winds, to dust, gritty particles, irritating fumes, or to any external source of irritation or injury.

The symptoms are, for the most part, those common to local inflammation, and are well-known. The eye, or eyes, become more or less bloodshot, swollen and tender, and a sensation of the presence of particles of sand or other gritty substance, with much heat and pricking, is constantly experienced. The fluid secretion of the eye becomes yellowish and thick, and during the night, by drying, frequently glues, as it were, the lids together; sometimes only one eye is attacked; but, except in very trivial cases, after two or three days the disease extends to the other.

The treatment of mild cases of ordinary ophthalmia is extremely simple. The eyes should be frequently bathed or fomented with warm water, or with decoction of poppy-heads; the light should be excluded as much as possible; the diet should be reduced below the usual standard, and be light and easily digestible; stimulating liquors should be carefully avoided; and the bowels kept gently open by the use of mild aperient medicines. When the inflammatory symptoms have subsided, lukewarm water, and then cold water, may be used to bathe the eyes, and very mild astringent and cooling eye-waters applied three or four times daily.

REMEDY FOR OPHTHALMIA.

In the chronic forms of ordinary ophthalmia, in the purulent ophthalmia of infants, and in that following the small-pox, measles and fevers, when there is little or no inflammation, mild astringent solutions may be at once had recourse to. The diluted ointment of nitrate of mercury, or of nitric oxide of mercury, is here also an excellent remedy.

In every variety of ophthalmia, the eye should be kept clean by careful and frequent ablution with warm water, or warm milk and water. The occasional use of the astringent solutions should be continued for some time after the disease has disappeared, for the purpose of preventing its recurrence and strengthening the eyes.

In the inflammation and ulceration of the eyelids called "psorophthalmia," or "ophthalmitis tarsalis," by surgeons, which is attended with considerable itching and irritation, and with a copious discharge of viscid, acrimonious matter, the ointment of nitrate of mercury, or of nitric oxide of mercury, diluted with ten or twelve times its weight of fresh washed lard, will be found an excellent remedy. A very small quantity of this ointment should be applied, night and morning, by means of a camel-hair pencil, a feather, or the tip of the little finger.

To relieve the pain and irritation in ophthalmia, psorophthalmia and

other like affections of the eye, a single drop of solution of hydrochlorate or acetate of morphia, or of wine of opium, previously diluted with twice or thrice its volume of water, may be applied to the organ two or three times a day.

Ophthalmia is sometimes symptomatic of other affections, as gout, rheumatism, hysteria, etc., when the treatment, under medical advice, will have reference to the primary disease. Intense pain, having this origin, is sometimes felt in the eye when no inflammation or other affection of this organ exists. The malignant forms of ophthalmia often produce intense suffering, ending in total blindness, and are highly contagious.

In blear-eye—"lippitudo"—there is an exudation of purulent matter from the margins of the eye-lids, which are red, humid and somewhat painful, and frequently, during the night, glued together by the discharge. Mild astringent eye-waters, or the ointments mentioned above, are here also the best applications. Excess in eating and drinking should likewise be avoided, and some aperient medicine taken.

HOW TO STRENGTHEN THE EYES.

Weak, watery eyes may be strengthened by frequently bathing them at first with tepid water, and afterwards with cooler water—the temperature being daily lowered until perfectly cold water be used.

Red or blood-shot eyes, when not depending on organic lesion or visceral disease, are usually produced by dissipation, gluttony or excessive drinking or smoking. The only remedy known is the abandonment of the vicious habits on which the evil depends.

The small inflamed tumor, or boil, somewhat resembling a barley-corn, which sometimes forms at the edge of the eyelid, and is popularly called a sty, though inconvenient and painful, is seldom of long duration. It is usually recommended to promote its maturation and suppuration by warm fomentations or poultices; since, when once formed, the sty, like other furunculous tumors, generally runs its course. A bread-poultice, to which a little sweet lard or olive oil has been added, is the best for the purpose.

Of external injuries of the eyes, those from blows, pressure, and the presence of foreign bodies are the most common. The pain and tumefaction produced by blows and pressure may, in ordinary cases, be generally relieved by freely bathing or fomenting the organ with warm water. The pain may be further relieved by the use of solution of acetate or

hydrochlorate of morphia in the way already mentioned. If persistent, the diet should be at once lowered, stimulants avoided, and aperients taken.

Black-eyes, arising from blows, may be treated in the way noticed under "bruises." Any persistent discoloration may be concealed, or greatly lessened, in the way mentioned in the next paragraph.

The darkness or discoloration round the eyes, frequently observable in females, and which is sometimes permanent, but more frequently periodical, is either constitutional or depends on certain conditions of health, and occurs and disappears with them. In the fashionable world, the aid of the cosmetic art is not uncommonly called in to disguise these discolorations.

A little French chalk or talc, in impalpable powder, is rubbed on the part and then gently "dusted off" with a camel-hair pencil or a tuft of badger's hair, or the excess is blown off with the breath. A little of the same powder that has been very slightly tinted with rouge or carmine is next applied, the excess being removed as before. The application of the pencil to clear the edges of the eyelashes, and of the corner of a soft napkin to "tone down" the outer margins of the parts treated, finishes the operation.

EFFECTS OF IRRITATING SUBSTANCES.

The effects of dust, dirt, acrid fumes, and other irritating substances on the eyes, may be met by freely bathing them in warm water, or by the use of the eye-douche. Gently raising the eyelid with the fingers, and holding it apart from the eye for a short time, will generally cause a copious discharge of tears, which will wash away the offending matter and relieve the irritation.

Foreign bodies, as particles of sand, grit, glass, metal, lime, mortar, or sparks from wood fires, the chimneys of steam-boats, locomotives, etc., lodged in the eye, should be at once removed by raising the eyelid, and the application of a feather, the corner of a silk handerchief, or the moistened tip of the finger. If the substance be embedded in the eyeball, or in the substance of the eyelid, a pair of forceps may be necessary to remove it, but they should be used in the most careful and gentle manner.

If the removal be delayed, the irritation that is rapidly set up renders the operation more difficult, and the consequences more serious.

After the operation, the eye should be freely bathed for some time with warm water, or when lime or mortar has been the offending substance, with water slightly acidulated with vinegar or acetic acid. In all serious cases, and particularly where the body of the eyeball is implicated, surgical aid should be immediately sought.

The eyelids deserve a special mention. The practice of tinting the edges of them black for the purpose of increasing the apparent whiteness and brilliancy of the eye, common among the ladies of Eastern nations, is, in our country, only occasionally adopted by actresses courtezans, and ladies of the demi-monde.

The beauty of the eyelashes consists chiefly in their length and silkiness. These qualities may be promoted by occasionally "topping" them with a pair of sharp scissors. The practice is most effective when commenced in early childhood. The least possible portion of their extremities should be removed; and the operation, to be neatly done, must be performed by a second person.

TREATING THE EYEBROWS.

The eyebrows unlike the eyelashes, should never be cut, or in any way subjected to the action of the scissors or razor. Their beauty consists in their being smooth, glossy, and well-defined, in having little breadth vertically, and in extending in a graceful, arched line over the eyes. Cutting them ultimately destroys these qualities, by causing them to grow coarse, stiff and irregular. After washing the face, the fingers or napkin should be passed over them to smooth them and to set the hairs in their places. This is all that is required.

Some ladies, however, when making their toilet, pass the finger, very slightly moistened with oil or pomade, over the eyebrows, to darken them and give them gloss; but the practice is not to be recommended. An occasional gray or prominent bristly hair in the eyebrows may be plucked out with the tweezers. It should never be cut off, as is the common practice.

Persons who dye their hair or beards are very apt to meddle with the eyebrows, and often produce effects contrary to their intentions, and far from pleasing. This is nearly always the case with persons of a light complexion, or who are pale, either from confinement indoors or from ill-health. It is true that Oriental ladies darken their eyebrows to enhance their charms; but then it must be recollected that their hair is naturally

black or dark, and that the tone of their complexions corresponds. Any interference with the natural color of the eyebrows should, therefore, be limited to merely brightening and slightly darkening them. Attempts beyond this generally end in discomfiture.

The nose, though so necessary to the general make-up, seems to labor under the misfortune of being generally turned into ridicule whenever it forms the subject on the tapis. How far it deserves the slights and fun so frequently "poked" at it, I must leave the happy possessors of noses to form their own opinions. There have been, however, many excellent and philosophical writers who have deemed the human nose worthy of their serious consideration, and even of euology.

WELL-FORMED NOSE ESSENTIAL TO BEAUTY.

Sir Joshua Reynolds regarded a well-formed nose as essential to personal beauty. He tells us, that "the line that forms the arch of the nose is beautiful when it is straight;" and he further observes, "this, then, is the central form which is oftener met with than either the concave, convex, or any other irregular form which can be proposed." Sir Charles Bell declares, among other matters, that "the nostrils," which form so prominent a portion of the nose, "are features which have powerful effect in expression. The breathing drawn through them, and their structure formed for alternate expansion and contraction, in correspondence with the motions of the chest, form an index to the condition of respiration when affected by emotion."

Mr. Warwick thus angrily argues against the indifference to the subject now generally existing:—

"Because the nose is influenced by the feelings which agitate and vary the mind, and is, therefore, immovable and unvaried, no one will hear the theory of Nasology broached without incredibility and risibility. Because the nose is subject only to those faculties of the mind which are permanent and unfluctuating, and is, therefore, likewise permanent and unfluctuating in its form, men have paid no attention to its indications, and will, accordingly, abuse as an empiric and a dotard the first nasologist.

"But is there, *a priori*, anything so unreasonable in attributing mental characteristics to the nose, when we all daily read each other's minds in the nose's next door neighbors, the eyes and mouth? Is not the *a priori* inference entirely in favor of a negative reply? And that, *a pos-*

teriori, it may confidently be replied to in the negative, will, it is hoped, presently appear."

The author next proceeds to "explain and demonstrate" his doctrine of noses, which he arranges in six different classes. To each class he ascribes certain mental and moral qualities, and sustains his arguments by outline portraits of distinguished men. Then he furnishes us with examples of "mixed noses," or such as are compounded of two or more of his leading types. These he also illustrates from life. His classification of noses is as follows:—

1. The Roman, or aquiline nose; 2. Greek, or straight nose; 3. Cogitative, or wide-nostrilled nose; 4. Jewish, or hawk-nose; 5. Snub-nose; 6. Celestial, or turn-up nose."

In this table, Mr. Warwick has degraded the Grecian or straight nose—the nose of beauty and intellect—to the second place. He has also omitted the "button nose," the "veritable pug-nose," and the nose which Solomon, in a strain of enamored flattery, compares to "the tower of Lebanon, which looketh toward Damascus."

THE HANDSOME GRECIAN NOSE.

Now, although each of the preceding noses, if gracefully moulded and proportioned to the other features, may occasionally form a component part of a pretty, or even a somewhat handsome face, it must be admitted, that the Grecian nose is essential to the higher forms of beauty. "Solomon," observes the reviewer, "merely proves the antiquity of the adage—*De gustibus nil disputandum.*" (There is no disputing about taste). "Now I deem it as becoming to see a woman standing behind a good, roomy nose, as to contemplate a fair temple with a majestic portico; but it may be questioned whether a nose like the tower of Lebanon, is not somewhat too elephantine, and bordering on the proboscis. The nose that turns up is undoubtedly smart and piquant; the button-nose, like all other diminutives, is endearing; and even the snub-nose absolutely has its admirers. Cupid can get over it, though it have no bridge, in the same way that 'he jumps through a wall-eye like a harlequin.'"

Mr. Warwick expatiates with evident zest on the noses of the Duke of Wellington and Napoleon Bonaparte. That of the first, he says, was a Roman nose—an undoubted fact; that of the latter, a Romano-Greek nose. He then triumphantly compares Wellington—nose and character—to Julius Cæsar; and Bonaparte, to Alexander the Great. According

to Napoleon III., however, Cæsar had a long, straight nose—*i. e.*, a Grecian nose; while certain other historical writers tell us that Alexander's nose, to use a gentle term, was not a prominent or beautiful feature in his face.

The "non-cogitative form" of the American nose almost brings tears into Mr. Warwick's eyes. He declares it to be "the most unthinking of any of the Gothic stock." "America is, however, a fast-growing nation; it had no infancy, but started at once into life, a full-grown youth." Mr. Warwick has, therefore, hope that the national nose of America will gradually improve, and ultimately assume the "cogitative form of that of its ancestors," which it should already possess by inheritance, but does not, according to this author.

NAPOLEON'S IDEA OF THE BEST NOSE.

"Give me," said Napoleon, "a man with a good allowance of nose;" from which we may infer, that great military commander regarded a liberal development of this feature as indicating the character desirable in a soldier.

Among refined nations, and even in the fashionable world, the nose may be regarded as one of the most fortunate of the features; since it almost uniformly escapes being interferred with at the toilet, further than simple cleanliness requires. This is precisely as it should be, for no interference with it, after childhood, can advantageously modify its form or promote its beauty.

The nose, with air-passages connected with it, always resents interference and mistreatment, whether there be frequent meddling with it with the fingers, blowing it frequently with ungracious violence, exciting it with stimulants, or choking it up with irritating powders. The ill effects of such treatment soon become perceptible, as may be frequently observed in irritable children and youth, and in inveterate snuff-takers. In the last, both the form of the nostrils and the tone of voice suffer. Heavy blows and pressure on the nose rapidly deform it, and destroy its beauty.

The beauty of the human mouth and lips, the delicacy of their formation and tints, their power of expression, which is only inferior to that of the eyes, and their elevated position as the media, with the palate, tongue, and teeth, by which we communicate our thoughts to others in an audible form, need scarcely be dilated on here. The poet tells us that—

"The lips of women out of roses take
The tints with which they ever stain themselves.
They are the beautiful and lofty shelves
Where rests the sweetness which the young hours make,
And which the earnest boy, whom we call Love,
Will often sip in sorrow or in play.
Health when it comes doth ruddiness approve,
But his strong foe soon flutters it away!
Disease and health for a warm pair of lips,
Like York and Lancaster, wage active strife;
One on his banner front the White rose keeps,
And one the Red; and thus with woman's life,
Her lips are made a battle-field for those
Who struggle for the color of a rose."

A beautiful mouth is one that is moderately small, and has a well-defined and graceful outline; and beautiful lips are such as are gracefully moulded, neither thick nor thin, nor compressed nor lax, and that are endowed with expression, and tinted with the hues of health. The ladies of Eastern nations commonly heighten the hue and freshness of their lips by means of cosmetics, a practice which in Western Europe is only adopted on the stage, and occasionally by coutezans and ladies of the demi-monde.

The lips are very liable to suffer when exposed to cold and drying winds. The most common effects of such exposure are chaps or small fissures in them, and a species of erysipelatous eruption consisting of small clusters of minute vesicles, which soon become moist from the discharge of the watery humor which they contain.

Chapped lips most frequently occur in persons with pale, bluish, moist lips, and a languid circulation, who are much exposed to the wind in dry cold weather, or who are continually moving from heated apartments to the external air. East and north-east winds are those that generally produce them. The occasional application of a little cold-cream, lip-salve, spermaceti-ointment, or any other mild unguent, will generally prevent them, and remove them when they have already formed. A still more elegant and effective preventive and remedy is glycerine diluted with about twice its weight of eau-de-rose, or glycerinated lip-salve or balsam.

The moist vesicular eruption of the lips, referred to above, may also generally be prevented by the use of glycerine, or any of the preparations just mentioned.

THE NECK AND LIMBS.

CHAPTER XXXVII.

OF the neck and throat little need be said. The evils resulting from tight bandages and pressure on these parts are evident; and here it may be useful to call attention to the ill consequences that frequently arise from their free exposure, or from their being insufficiently protected from draughts, cold, and rapid vicissitudes of the weather. The low dresses of fashionable life that generally replace, at a later part of the day, the higher and warmer morning dress, which until then has been worn in safety and comfort, are perhaps the most certain traps ever invented by fashion to catch sore throats, bronchitis, influenza, and a whole host of breath-ailments, of which fatal lung diseases are the common results. In early life, low frocks are more particularly dangerous, and are rendered still more objectionable from the habit which children commonly have of shuffling them off one of the shoulders, and thus leaving the upper portion of the chest exposed in a manner that even the most hardy often cannot long resist.

It should be recollected that the throat and neck, particularly the first, contain numerous important glands, and other organs, which are highly susceptible to cold and changes of temperature; and that, at the bottom of the throat, lie the apexes of the lungs—those delicate organs, which, in these latitudes, are many times more susceptible to disease from exposure and climatic changes than all the other vicera put together.

The neck of beauty is that of the period which ranges from the early prime to the ripe maturity of women, of which the most perfect conception is given us in the Greek sculptures—the Venus, the Diana, the Niobe, and many of the Naiads. In masculine beauty, the Apollo Belvedere, in this respect, furnishes a transcendent model to all time.

Neither the elongated cylinder that forms the neck of the crane-family, nor the frustum of a cone which forms that of certain porcine bipeds, can possibly have the slightest pretentions to beauty.

Of the shoulders, it may be observed that, in woman, those are the most beautiful which are neither wide nor meanly narrow, and which droop or flow, as it were, into the arms in a graceful undulating curve. In man, broad shoulders, if well proportioned, are a sign of strength. Stays or corsets, worn in youth and early maturity, tend to make the shoulders high and broad; and thus distort, instead of improve, the figure.

The armpit or "axilla" may be referred to here, on account of the common practice, among ladies, of wearing pieces of oil-skin, oiled silk, thin sheet gutta percha or India-rubber, and the like, inside their dress, over the part, under the name of "dress protectors." This practice cannot be too strongly reprobated; since the axilla is full of important blood-vessels, nerves, glands, etc., and should not be subjected to undue heat, a close atmosphere, or pressure. Two or three folds of good blotting-paper, covered with a piece of gauze, will affect the same object as these so-called "dress-protectors," without any of their inconvenient results.

DELICACY AND BEAUTY OF THE ARM.

Of the "limbs," the arm may rationally claim the first notice. To preserve its delicacy and beauty it should be shielded from the weather, and particularly from the direct rays of the sun, and from cold drying winds, by means of appropriate clothing, as noticed when speaking generally of the skin.

The human hand, regarded either with reference to its ingenious construction and usefulness, or to its beauty, stands alone, in its superlative excellence, in the whole animal world. In no other species of animal is the hand so wonderfully formed, and so perfectly developed, as in mankind. Springing in a compactly moulded body from the wrist, and provided with fingers possessing expanded tactile extremities composed of an exquisitely sensitive and discriminative integument, and, above all, possessing a thumb which may be either placed in opposition or opposed to the other fingers, it is endowed with all the essential attributes of strength and mobility, and exalted powers of perception, of delicate and varied operations, that the ordinary purpose of life, and the industrial and constructive skill of an intellectual being can require.

In the anthropoid organ—the animal the nearest approaching man in the formation of the upper extremeties—the disproportionate development of the fingers, and the dwindled thumb, mark its imperfections for handling and for touch; whilst the arms, lengthened to actual deformity, proclaim their chief use to be for grasping and climbing, as a forest animal.

In olden times it was a common superstition that the character and fortune of the individual were legible in the hands, to the eyes of the initiated. Volumes were, indeed, written on the subject, and pretended professors of the art were numerous, and greatly sought after by the ignorant and superstitious.

Of the different systems of "chiromancy," or divination by the hands, the most popular and extensively practiced was "palmistry," or fortune-telling by the lines of the palm. Though now chiefly confined to gipsies, it was once professedly explained and warmly defended by grave and learned authors. Then there was "dactylomancy," or the art of divination by the fingers, and by finger-rings; and also "onychomancy," or divination by the nails.

CHARACTER INDICATED BY THE THUMB.

The form and size of the thumb, too, were thought to be significant of the character, and of coming events that thus "cast their shadows before." A finely formed and well developed thumb was regarded as indicative of a strong and active individuality; whilst the reverse was conceived to be indicated when it was small and ill developed. The same parties conceived that persons with a small thumb are ruled by the heart, and are prone to be faithful in friendship and constant in love; whilst those with a large thumb are guided by the head, and oftener follow the dictates of self-interest, and cold calculating reason, than the impulses of affection and duty.

The motive hand, it was said, is always furnished with a large thumb. In La Vendée, a large thumb is still thought to indicate one who dabbles in the forbidden mysteries of the "black art." The term "pollex truncatus" was applied by the Romans to a person who, for the purpose of avoiding military service, basely cut off or mutilated the thumb; and lexicographers tell us that from this term, by contraction and corruption, comes our word "poltroon."

In the Roman amphitheatre, the desire that a conquered gladiator

might be spared was expressed by raising the thumb; its depression was a sentence of death. Among the Anglo-Saxons, mutilation of the thumb was punished by a heavy fine. Itching of the thumbs was formerly supposed to indicate the approach of a stranger; and the words of Shakespeare, "I will bite my thumb at them, which is a disgrace to them if they bear it," show that this biting the thumb was then held to be strongly expressive of insult and defiance.

NEGLECT OF THE HANDS.

To preserve the delicacy and beauty of the hands, some little care, and more than that which is ordinarily bestowed on them, is required. Foremost in consideration must be the subject of cleanliness. Dirty and coarse hands are no less marks of slothfulness and low breeding, than clean and delicate hands are of refinement and gentility. To promote the softness and whiteness of the skin, mild emollient soaps, or those abounding in oil or fat, should alone be adopted for common use; by which means the tendency to contract chaps and chilblains, and roughness from drying winds, will also be lessened. The coarse, strong kinds of soap, or those abounding in alkali, should, for a like reason, be rejected, as they tend to render the skin rough, dry and brittle. The immersion of the hands in alkaline lyes, or in strongly acidulated water, has a similar effect, which increases with the temperature of the liquid. Rain-water, or soft water, is the best natural water for washing the hands, as it cleanses them more rapidly and completely than ordinary hard water, and with the use of less soap. Glycerinated water renders the skin soft, white and supple. The best time for applying is immediately before retiring to rest at night. Coarse, red, dark-skinned hands may be whitened by the occasional use of a few grains of chloride of lime with warm water.

Roughness of the hands, induced by exposure to cold and drying winds, may, in general, be removed by the use of a little powdered pumice-stone with the soap in washing them. The subsequent application, particularly at night, of two or three drops of almond-oil or olive-oil, well rubbed in, will usually effect the object completely.

The hands may be preserved dry for delicate work by rubbing a little club-moss (lycopodium), in fine powder, over them. So repellent is this substance of moisture, that if a small quantity of it be sprinkled on the surface of a basin of water, the hand, by a little adroitness, may be plunged to the bottom of the basin without becoming wet.

Excessive moistness or perspiration of the hands, without obvious cause, is generally indicative of debility or disordered stomach, and requires corresponding treatment. Frequently washing the hands in moderately cold water often proves a local remedy for the inconvenience. The addition of a few grains of alum, sal ammoniac or sulphate of zinc, or of a teaspoonful of vinegar, to the water, greatly increases its efficacy. Extremely delicate and susceptible persons cannot always bear the excessive perspiration of their hands to be thus suddenly lessened, and therefore some discretion should be exercised by them in their attempts to check it.

Persons who are compelled to handle substances, or to immerse their hands in liquids, that injuriously affect the skin, would do well to wash their hands as soon after such exposure as possible, and apply a little glycerine or oil to them every night. In many cases, injurious consequences may be prevented by well rubbing the hands with a little salad-oil or fat before commencing their business duties, the excess of oil being removed by the free application of a towel When possible, thick leather gloves, or, what is often better, gloves of India-rubber or Mackintosh, may be worn.

DISTORTED JOINTS AND FINGERS.

Rough usage or violent exertion of the hands, whether in work or in sport, tends to make them broad, thick and coarse, and to produce enlargement and distortion of the joints of the fingers. Lifting heavy bodies with the fingers is particularly destructive of their beauty, as it causes the tapering circular form, so much admired in them, to be lost, their tips becoming broad and flat, and the nails also flattened.

In all cases the use of gloves out of doors is necessary, in both sexes, to preserve the delicacy and beauty of the hands—to protect them from the direct rays of the sun in summer, and the drying winds and cold of the other seasons of the year.

"Gloves," says a French author, "are the complement of every costume." "Their existence is not modern—traces of them are found in Scripture, in Ruth and in the Book of Kings. Homer, in his 'Odyssey,' shows us Laertes pulling up thorns in his garden, his hands being defended by leather gloves. Xenophon refers their first use to the Persians. Athenæus describes a celebrated gourmand who came to a banquet with gloved hands, to eat more rapidly and easily, whilst the other guests waited for the viands to become sufficiently cool to handle.

Silk mittens remind us of the fine old days of Louis XIV. and the coquettish epoch of Louis XV. At the present day we have mittens, gloves of kid, worsted, silk, muslin, Scotch thread and cotton.

The finger-nails require special attention if we desire to preserve them in their highest condition of beauty and usefulness. To keep them clean, the nail-brush, and soap-and-water, should be used once or oftener daily, as circumstances demand. Once a day, at least, on wiping the hands after washing them, and whilst they are still soft from the action of the water, the free edge of the scarf-skin which, if not attended to, is apt to grow upward over the nails, should be gently loosened and pressed back, in a neatly rounded form, by which the occurrence of cracks and sores about their roots will be prevented, and a graceful oval form, ending in a crescent-like space of white, will be ensured.

TREATMENT OF THE FINGER NAILS.

This skin, as a rule, should never be cut, pared, picked, or torn off, as is commonly done; and the less it is meddled with, otherwise than in the way just mentioned, the better. The ends or points of the nails should be pared once every week or ten days, according to the rapidity of their growth, which somewhat varies with the season of the year and the habit of the individual. This is best done with a penknife or nail-knife. Scissors are less convenient for the purpose, and have the disadvantage of straining and distorting the nails during the process.

The length and shape of the nails, both for beauty and use, should exactly correspond with the tips of the fingers. Nails extending beyond the ends of the fingers are vulgar, claw-like, and inconvenient; whilst if shorter, particularly much shorter than the fingers, they are unsightly and of little use, and cause the tips of the fingers to become thick and clumsy. Biting the nails should be avoided as a dirty and disagreeable habit, and one utterly destructive to their beauty, strength, and usefulness.

To remove stains and discolorations of the nails, a little lemon-juice, or vinegar-and-water, is the best application. Should this fail, a few grains of salt of sorrel, oxalic acid, or chloride of lime, each diluted with warm water, may be applied, care being taken to thoroughly rinse the hands in clean water, without soap, afterwards. Occasionally a little pumice-stone, in impalpable powder, or powdered cuttle-fish bone, putty-powder (polisher's peroxide of tin), may be used along with water and a piece of wash-leather, flannel, or the nail-brush, for the same purpose.

The frequent use of any of these substances is, however, injurious to the healthy growth, strength, and permanent beauty of the nails. The common practice of scraping the surface of the nails cannot be too strongly censured, as it causes them to become weak and distorted. Blows on the nails, and, indeed, violence to them in any form, also distorts and marks them.

The ladies of Oriental nations commonly dye the nails; and amongst many savage tribes the same practice is adopted, and is not confined to the gentler sex. Among Western Europeans, and Americans, white and regularly formed nails are alone esteemed.

HOW TO TREAT AFFECTIONS OF THE HANDS.

Of affections and injuries of the hands, the following may be usefully noticed here:—

Chapped hands are common among persons with a languid circulation who are continually "dabbling" in water during cold weather, and particularly among those with a scrofulous taint, who, without the last, expose their ungloved hands to bleak cold winds. The best preventives, as well as remedies, are the use of warm gloves out of doors, and the application, night and morning, of a little glycerine, diluted with twice or thrice its weight of water, or a little cold-cream, spermaceti-cerate, salad-oil, or any other simple unguent or oil, which should be well rubbed in, the superfluous portion being removed with a towel.

Chilblains are those well-known inflammatory swellings, of a color more or less leaden or purple, produced by the action of cold. They exclusively attack the extremities of the body, and are generally confined to the fingers, toes, and heels. Itching, irritation, and tenderness, often accompanied with shooting pains and tumefaction, are the common symptoms. Children, particularly those of a weakly or scrofulous habit, and elderly persons, are generally the most liable to them; but they are frequent among all persons in whom the circulation in the extremeties is languid.

One of the most common causes of them is holding the hands or feet to the fire after they have been exposed to cold. Any sudden change of temperature under such circumstances, especially from cold to heat, should be carefully avoided, as the action of the minute surfacial blood-vessels is thereby more or less arrested, and their vitality, in many cases, partially destroyed.

The best preventives of chilblains are warm, easy-fitting gloves of worsted or leather, woollen stockings or socks, good water-proof, but not air-tight, boots and shoes, vigorous exercise, and vigorous friction. These act by keeping up the heat of the parts and protecting them from vicissitudes of temperature, by which the circulation of the blood in the minute vessels of the surface continues unchecked.

When chilblains have once formed, and during their incipient stages, the best treatment is with local stimulants and counter-irritants. Among these may be mentioned, painting the parts twice a day with strong tincture of iodine, or friction with oil of turpentine (with or without the addition of a little salad-oil), opodeldoc, camphorated oil, hartshorn-and-oil, and the like. Glycerinated lotion of sal-ammoniac is also an effective remedy. Linnæus recommended bathing the parts with dilute hydrochloric acid just strong enough to slightly prick the skin. When the inflamed parts ulcerate and break, the usual treatment is to dress them with a little spermaceti-ointment to each ounce of which a few grains of tannic acid have been added. If glycerine (somewhat thickened, or not, with a little arrow-root) be substituted for the spermaceti-ointment, or a small portion of glycerine be well triturated with the ointment, a still more effective remedy will be produced. In all cases care should be taken to cleanse the ulcers with warm water at each renewal of the dressing.

WHAT TO DO FOR CHILBLAINS.

Persons subject to chilblains should be particular to wipe their hands thoroughly dry after washing them, and would do well to continue the friction with the towel for two or three minutes afterwards. It will tend to prevent their accession.

Swelled and distorted finger-joints, arising from rheumatism, rheumatic gout, and the like, may generally be greatly relieved, and frequently wholly cured, by the free use of fresh lemon-juice internally, and a hot and strong solution of common soda, as an embrocation. Even enlarged finger-joints containing the gouty excretions popularly called "chalk-stones" will, in general, yield to this treatment, if it be freely and perseveringly carried out. Old distortions and enlargements of the kind, remaining after the disease that produced them has passed away, will frequently yield to painting them every night, or every other night, with tincture of iodine.

Warts, like chilblains, are too well known to require description.

They chiefly attack the hands, and particularly the fingers; but sometimes occur on other portions of the body. They may be removed by rubbing or moistening their extremities every day, or every other day, with lunar caustic (fused nitrate of silver), nitric acid, concentrated acetic acid, or aromatic vinegar; care being taken not to wash the hands for some hours after. The first is an extremely convenient and manageable substance, from not being liable to drop or spread; but it produces a black stain, which remains till the cauterized surface peels off. The second produces a yellow stain, in depth proportioned to the strength of the acid employed. This also wears off after the lapse of a few days. The others scarcely discolor the skin.

MAGIC CURE FOR WARTS.

Warts often disappear under the influence of the imagination, and strong mental excitement, in a very singular way. Thus, among the ignorant and superstitious, amulets and incantations, and "touches" with substances that cannot possibly exert the slightest chemical, dynamical, or physiological action on the part, supported by a lively faith, are not infrequently sufficient to cause their disappearance. The sudden confusion and embarrassment into which a sensitive and nervous person is thrown, by being unexpectedly accused of something of which he is entirely innocent, will also sometimes produce a like effect.

Warts are also sometimes produced by agencies that are apparently insufficient for the purpose. Thus, blowing on the back of the hands, or on the face, with a pair of bellows, has been known occasionally to be followed by a crop of warts on the part.

The human foot is a wonderful piece of organic mechanism composed of many bones, ligaments, muscles, and tendons, associated with arteries, veins, nerves and other vessels. In order to secure in the foot the requisite firmness in standing, it is articulated with the leg at right angles, so that the heel and toes touch the ground; and the joint is placed nearer the posterior than the anterior part of the foot, so as to increase the base of support in that direction towards which the body tends most to fall; besides which, the weight is here received on the inner side of the foot where it is most arched, thereby offering not only the advantage of a strong support, but one which is highly elastic, yielding without injury in alighting on the feet, and acting as a spring in progression.

A beautiful foot is one which is small, rather than large, in proportion to the leg and stature, and of which the instep is high, or moderately high, and arched; of which the waist, or portion under the instep, is hollowed and well raised above the level of the sole, with the toes regular and well developed, the heel narrow and non-protruding, and its general outline long, slender, and graceful.

Among females, a very small foot possessing these proportions is considered the acme of beauty. The agility of foot and the pedestrian powers of the individual, other matters being equal, are in exact relation to the degree in which the above-mentioned qualities are present. The protruding heel and flat foot of the negro, and of some of the races of the Russian empire, are peculiarities, if not deformities, which render their possessors clumsy in gait, and incapable of continued long journeys.

HEALTH AND BEAUTY OF THE FEET.

The health and beauty of the foot is promoted by exercise, easy-fitting and appropriate boots or shoes being worn. Walking, dancing, running, and skipping, whether taken as exercise or indulged in for amusement, are thus to be recommended, independent of their value in a hygienic point of view.

To preserve the feet in a thoroughly healthy and comfortable state, the first object of attention should be cleanliness—thorough cleanliness. For this purpose they should be frequently soaked and well washed in warm or tepid water, good yellow soap being freely used to remove the dirt and perspiration which accumulate about them. This should be done, if possible, every day in summer, every other day in spring and autumn, and twice a week in winter. The appropriate time for the operation is at night, before retiring to rest.

Once a week, after soaking, washing, and drying them with the towel, but whilst still soft from the action of the water, the feet should be carefully examined, loose portions of skin removed by friction with a dry part of the towel or with the fingers, and callosities or indurations reduced by the finger-nails, or by rubbing them with a piece of pumice-stone. About once a fortnight, on a similar occasion, the nails of the toes should be inspected, when such of them that require it should be pared with a sharp penknife, to prevent them becoming inconveniently long or growing into the flesh. Their proper length is that of the toes; and the shape of their extremities, that of the natural curve of the part.

If they are allowed to grow beyond the ends of the toes, they are liable to be forced back and distorted by the pressure of the boot or shoe, and to grow into the flesh; whilst if they are shorter, or much shorter, than the toes, the extremities of the latter lose their natural support. Nails that have a tendency to spread sidewise and to grow into the flesh —a thing that always originates in pressure—should be kept carefully pared at the sides or offending part.

It is highly necessary to the preservation of health to keep the feet dry, and to shelter them from cold and sudden changes of temperature. Persons who are exposed to the wet or cold, or who are frequently passengers through the public streets in bad weather, should, therefore, regard sound and good boots and shoes as of the first importance. In a hygienic point of view, a wet back should be less shunned than wet or cold feet.

COLDS CAUSED BY WET FEET.

Damp feet are, as a necessary consequence, always cold; for it is one of the natural laws that "evaporation produces cold," and the way a wet or damp foot becomes dry is by the conversion of the water into vapor, the latent heat necessary to the existence of the latter being derived from the sensible heat of the feet. We may trace one half (certainly a vast number) of the consumptions of this country to cold suddenly applied to the feet, by which the sensible exhalation is checked; and it is not sufficiently impressed upon the mind that when once the regular perspiration from the feet is checked, it is a matter of the utmost difficulty to restore it.

The nightly foot-bath or pediluvium is in vain had recourse to, although the natural instinct of the human mind has shown that this is the best remedy; the reasons for which it is required are overlooked, and the simple warmth it produces is thought to be all that is required. Hence spring up a host of maladies which owe their origin to inattention to the humbler parts, as they are considered, of the human frame—the feet and toes; but which, in fact, are as important members of the body corporate as are any structures of more complicated organization."

Tender feet generally arise from the neglect of cleanliness, the use of thin cotton or silk stockings, and boots or shoes that are either too tight or stiff, or misshaped, or not sufficiently porous to admit of the escape of the perspiration. Of these, tight boots and shoes and waterproof ones, which are also air-tight, are the most common causes of

tender feet, as also of headaches, dizziness, dyspepsia, diarrhœa, and even apoplexy.

Boots and shoes too narrow across the toes or the tread of the foot, or insufficiently long for ease and comfort, though large enough elsewhere, either cramp and distort the fore part of the foot and toes, or arrest the nails in their forward growth, forcing them back upon the sensitive flesh at their roots and sides, and causing them to grow in thickness and width only. The results may be gradual, but are always painful.

The best treatment of tender feet is soaking them nightly in tepid water, to which a handful of bran may be added, or not, at will. When the tenderness is extreme and persistent, a little powdered borax or sal-ammoniac should be added to the water. In all cases woollen or worsted stockings or socks, and boots or shoes with uppers of buckskin, goatskin, French calf, or some equally soft kind of leather, should be worn.

FEEBLE STATE OF CIRCULATION.

Coldness of the feet indicates delicate health, and a feeble state of the circulation. It should be met by active exercise and friction, the use of warm woollen stockings, and efforts to improve the general tone of the system. The coldness and numbness of the feet common in the debilitated and aged may also be treated in a similar manner; but here the socks or stockings may be advantageously kept on throughout the night, or, at all events, until the feet become comfortably warm. When this proves insufficient, a foot-warmer filled with hot water may be placed in the bed.

The peculiar and very disagreeable odor evolved by the feet of some persons in hot weather generally arises from unnatural perspiration, insufficient attention to cleanliness, and from wearing cotton stockings and non-ventilating boots or shoes. The remedy is obvious. The feet should be soaked and washed nightly in warm water, good yellow soap being at the same time freely used, thin woolen stockings, of which a clean pair should be put on daily, should be alone worn, and boots or shoes adopted which are, light, easy, and permeable to the perspiration. When this fails, a teaspoonful of good chloride of lime, or about twice that quantity of sal-ammonia, or even of common salt, or a tea-cupful of strong vinegar, may be added to the water in which the feet are soaked, the use of soap being at the same time omitted.

Sore feet produced by walking, violent exercise, or in any other

similar manner, may be treated as noticed above under "tender feet." Abrasions, after soaking and washing them, should be protected by a piece of common strapping or sticking-plaster, or a piece of lint spread with spermaceti-ointment, the dressing in either case being bound on with a strip of thin soft rag.

If bladders have formed, they should be opened, and the water or serum which they contain should be pressed out. When they occur on parts where the skin is thin and delicate, it will be sufficient to pass a coarse needle through them; but where the skin is thick and hard, as on the heels and balls of the large toes, this is insufficient for the purpose. In this case the central part of the bladder should be pinched up between the thumb and finger, and the skin freely snipped, completely through, with the points of a pair of sharp scissors.

REMEDIES THAT ARE RECOMMENDED.

The whole of the water being then pressed out, the part should be covered with a couple of folds of soft rag, to protect the opening from the stocking, and to allow the escape of serum, which will generally continue to ooze out for some time. The loose skin should not be detached for some days, or until a new portion of cuticle has formed under it.

If it be done before, the raw and tender surface of the cutis will be exposed, and will often, for some time, occasion much pain and inconvenience. The stiffness resulting from long pedestrian excursions, and, if not attended to, often lasting several days, may be treated by hot knee-baths or foot-baths, or, better still, by a general hot vapor-bath or a Turkish bath.

Chilblains in the feet have been noticed in speaking of chilblains of the hands. The causes, prevention, and treatment, of the two are essentially similar. The feet, however, owing to the less vigorous circulation of the blood in them, are the more liable to chilblains. In addition to what has been already said on the subject, it may be remarked that soaking the feet, before retiring to rest, in warm water to which a handful of bran, and two or three teaspoonfuls of sal-ammoniac, have been added, is very useful either for preventing them, or relieving them when formed.

Corns are horny indurations of the skin, with a central nucleus very sensitive at the base, and occur on the exposed portions of the joints of the toes. The common cause of them is continued pressure or friction

on the projections of the bones from tight, stiff, or ill-fitting boots or shoes. This suggests the means of their prevention, which, in addition to cleanliness, consists essentially in wearing easy-fitting, soft boots and shoes. If this be neglected, corns are almost certain to form; and they will as certainly reappear, however often, and however perfectly, they may be removed.

The curative treatment of corns is very simple, though often somewhat troublesome and tedious. After soaking them for some minutes in warm water, to soften them, they should be pared, with a sharp penknife, as close as possible without causing pain or making them bleed, observing to extract as much of the central portion of the base—popularly, but incorrectly, called the "root"—as possible. The pared surface of the corn, and particularly its central and upper portion, may now be touched over with any substance capable of destroying the vitality of the indurated cuticle, or at least the part of it next the surface, and thus causing it in a few days to separate or permit its removal.

TREATMENT OF CORNS.

For this purpose caustics or corrosives are employed. Of these the most convenient and manageable, and the one most in favor, is fused nitrate of silver, or lunar caustic. This substance, held between paper to shield the fingers, is used by simply rubbing it on the corn, previously slightly moistened with water. Nitric acid, concentrated acetic acid or strong aromatic vinegar, and strong tincture of iodine or iodine paint, are other effective substances which are frequently employed to remove corns.

Being liquid and highly corrosive, the surface of the corn is moistened with them by means of a strip of wood, or, preferably, a small rod of glass, due care being taken not to allow the liquid to spread or touch the neighboring parts, or, in conveying them, to drop on the skin or dress. After the application of either the caustic or one of the liquids mentioned, the parts medicated should be left uncovered for a short time until quite dry. In the course of three or four days a portion of the cuticle, more or less thick, disorganized by the action of the remedy, will begin to detach itself, and may be removed with the nail, either at once or after soaking the foot for a short time in warm water. The application of the caustic, or the liquid, and the whole treatment, should then be repeated, and again every third or fourth day, until a cure is effected, soft, loose shoes being, as far as possible, worn during the whole time.

Some writers recommend ligatures of silk for the removal of large corns. The silk is applied as close to the base of the corn as possible, and is tightened daily until they drop off. This plan is tedious, is often very painful, and particularly inconvenient when the patient is compelled to wear ordinary boots or shoes during the day; and, further, is not always successful.

Another mode of extirpating corns, sometimes adopted, and with greater success than the last one, is the application of a small blister. This will frequently raise them, with the skin, out of their beds, and permit of their complete removal. The delicate exposed surface must then be dressed with a little simple ointment, spread on lint, and this must be retained in its place by a slight bandage formed by a strip of soft calico.

PUMICE STONE AND ADHESIVE PLASTERS.

Among methods, purely mechanical, for the cure of corns, two particularly deserve notice. The one is, to wear upon the toe, or part affected, a small circular piece of soft buckskin, spread with any adhesive plaster, and having a hole punched in the centre corresponding to the size of the corn. In this way the pressure of the boot or shoe is equalized, and the apex of the corn protected from injury; by which the pain is at once relieved, and, provided the prominent surface of the corn be occasionally pared, a radical cure is ultimately effected.

The other method above referred to, is to gradually reduce the corn by nightly rubbing it, in the dry and hard state, with the flat surface of a piece of pumice-stone, or with a piece of glass, sand, or emery-paper. The relief afforded will increase daily until the extirpation be complete.

Soft corns, or those that occur between the toes, may generally be cured, as well as prevented forming, by daily scraping the part, whilst soft and moist, with the edge of a penknife, or with the finger-nail, so as to remove as much of the thickened and disorganized cuticle as possible. When this does not succeed, a little soap-cerate, spread on a piece of lint or soft rag, may be placed as a "dressing" between the toes and renewed daily; soaking the feet in warm water, and scraping the part, being also adopted.

Slightly rubbing the prominent parts with lunar caustic, or slightly moistening them with strong vinegar, or with tincture of iodine, every second or third day, will also remove them. When these substances are used, the toes should be kept apart until the skin becomes dry, when a

strip of paper, or thin calico, should be placed between them. A common remedy for soft corns, among the vulgar, is a piece of ivy-leaf that has been soaked in vinegar. It is renewed daily.

A bunion is a species of corn or swelling on the ball, or the chief joint, of the great toe, resulting from pressure and the irritation produced by friction. The treatment recommended for "corns" applies, for the most part, also to bunions; but in consequence of their greater extent, and the greater degree of irritation accompanying them, the cure is more tedious.

FOOD FOR INVALIDS.

CHAPTER XXXVIII.

CONCERNING the invalid's tray, it should be arranged as daintily as possible; serve only the amount she can take, for many times the sight of a large quantity of food will cause nausea and render it impossible to taste a particle. And before feeding bathe the hands and face with a cloth wrung out in hot water. Good nurses omit this sometimes, but the refreshment gained thereby often gives a relish to the food. Never leave food standing by a patient with the hope that an appetite may be aroused by its presence. Remove at once and serve again later on, in fresh dishes if necessary.

Dishes should be heated if the food is to be served hot and kept cold if to be served cold. Custards should be set in ice or in pans of cold water. Serve food to the sick at regular intervals, even if only a tablespoonful can be taken at once; it will help keep her strength. In dropping medicine into a spoon, place the handle between the leaves of a closed book lying on the table, and then both hands may be used in dropping the mixture. For nausea scorch some rice, pour boiling water over it, and drink as hot as possible.

SOME DON'TS FOR THE SICK ROOM.—Don't make unnecessary noise. Don't let doors squeak; oil them. Don't whisper. Don't make noticable and exaggerated efforts at being quiet. Don't speak of similar cases with fatal terminations. Don't admit tearful visitors. Don't keep the room too hot. Don't forget frequent ventilation. Don't raise a dust. Don't forget to bathe the patient's face and hands frequently and wash the teeth and mouth.

Don't give stimulants unless ordered by the physician. Don't wake patient from a sound sleep to administer medicine. Don't ask the patient "how she feels" every few moments. Don't taste the patient's food with her spoon. Don't masticate loudly and cheerfully yourself while the patient is dieting. Don't prepare food in the sick room. Don't ask the patient what she wants to eat. Don't fail to have plenty of fresh, clean

towels. Don't let cold food get hot, or hot food get cold. Don't let food stand by the bed. Don't bring too much food at a time. Don't wet the bedclothing and dress in feeding the patient. Don't make her drink too fast. Don't leave bureau drawers open and shades crooked. Don't yawn frequently and unreservedly. Don't jar the bed. Don't rock vigorously and continuously. Don't introduce mournful and suggestive subjects. In a word, don't forget that a sick person, if conscious at all, is apt to have painfully acute perceptions and sensibilities, on which trifles jar in a superlative degree. When a patient cannot be raised from the bed without risk of exhaustion, a medicine tube or crockery feeder should be used, but the same appliance, or even one of the same appearance, should not be used for administering both food and medicine.

TO KEEP CRACKED ICE.—Take an ordinary porcelain pudding dish. Over the top tie a large square of clean, old white flannel. Inside the dish let the flannel bag down so as, by all but an inch, to touch the porcelain bottom. Set as much ice as will be needed for a time into this flannel bag, and cover it by throwing back the long points hanging outside the dish. Thus suspended and covered, the ice melts very slowly, even in a warm room.

When a feverish patient demands a bit every few moments, a neat little home-made device for cracking silently little lumps of ice, as they are required, is made from a large cork. Into one end insert the head of a No. 8 needle. By merely pressing the cork down with a thimbled finger, the needle quickly splits the ice apart. It is well to cut a tiny opening in the bottom of the flannel bag, that it may drain more quickly. Crushed ice can be prepared in a couple of minutes by chopping off a piece from the large cake with an ice-pick; put the piece that is to be crushed in a clean coarse cloth; gather the corners of the cloth, and bang it two a three times against any unbreakable surface, as a stone hearth, iron sink, etc. Rinse the ice first, and use a clean cloth, and the crushed ice will be perfectly clean.

NOURISHING DRINKS.

When the temperature reaches 101 degrees or over, the sick person should be fed liquids only, because the power of the stomach to digest food is impaired, and it needs assistance. Besides this, when there is loss of appetite, the sufferer will relish food in liquid form after she turns in disgust from delicacies in solid. There are a

great variety of nutritive foods, easily prepared, to tempt the palate; among which are arrowroot, cornstarch, clam juice, jellies, such as calf's foot jelly, wine or lemon jelly, meat jelly, wine whey. Mutton broth is healing; and then there is barley gruel, rice gruel, flour gruel, oatmeal gruel, Indian meal gruel, and sago gruel.

APPLE WATER.—Pare and slice a fine, juicy apple. Pour 1 large cupful of boiling water over it. Cover and let stand until cold. Or, roast 2 nice tart apples; do not burn. Cut them up, and pour over them 1 pint of boiling water. Let cool. Either of these will be found a refreshing drink. They may be sweetened slightly, if liked, and a couple of cloves may be added. This is an excellent drink for a feverish cold.

TAMARIND WATER.—Over 1 glass tumbler of tamarinds, pour 1 pint of cold water. Let stand 1 hour before using, then strain.

RICE WATER.—Rice water is a pleasant drink for children and invalids. Boil a teacupful of rice in 3 pints of water. Allow it to simmer gently for three-quarters of an hour, when strain it and sweeten a little, if liked. At times when choleraic disorders are prevalent, a stick of cinnamon boiled in it makes a comforting beverage. Raisins boiled in it, give it a pleasant flavor; so also does the thin yellow rind of a lemon.

BARLEY WATER.—A favorite, as well as nourishing drink for invalids, is barley water. To prepare it, place a quart of water in a saucepan over the fire. Wash well 2 ounces of pearl barley, and throw into the water. Bring it to boiling point, then add lemon and sugar to suit the taste. Draw the pan to the back of the fire, and simmer gently 2 hours. Strain, and cover until cold. It should be reduced about one-half when done.

CRUST COFFEE.—Brown crusts of wheat bread or Graham biscuits in the oven until thoroughly toasted through, but not burned. Break in pieces, and pour boiling water over them. Let steep, and serve as ordinary coffee, with cream and sugar. Very wholesome for dyspeptics.

TOAST WATER.—Make as above for Crust Coffee, but not so strong, and give it cold, without milk or sugar, as a drink.

CORNMEAL COFFEE.—Put 1 pint of coarse corn meal into a bowl, and pour over it a pint of boiling water; stir till well mixed; add a cupful of cold water, a tablespoonful of molasses, a pinch of salt, and 1 pint of coarse wheat or oatmeal. Stir well together; dust a dripping-pan

with cornmeal, and pour in the batter. Bake until browned, in hot oven. When ready to make the coffee, split the cake, put it in the oven to brown, but do not scorch; break it into pieces, and put it into a large earthenware pitcher. Pour 1 quart of boiling water over it. Simmer for an hour or longer. Serve with sugar and cream. It can be made of the cornmeal alone. It is most excellent for dyspeptics, who cannot use coffee without injury.

LINSEED TEA.—Place in a jug 1 ounce of bruised linseed, 2 drachms, bruised licorice-root, half ounce white sugar and 2 tablespoonfuls of lemon juice, and pour over them one pint of boiling water. Cover tightly, and digest for three or four hours near a fire. Strain through linen before using. This makes a mucilaginous liquid, possessing demulcent properties, and of special value in bronchial affections.

OATMEAL SHRUB.—Put 4 ounces of fine, fresh oatmeal into a jar, add 6 ounces of white sugar and the juice of a lemon. Moisten with lukewarm water enough to mix; then pour over 1 gallon of boiling water, stirring thoroughly. Let settle; use cold. This is a very strengthening and and refreshing drink, expecially for invalids. The flavoring may be varied to suit the taste. It is often used without either sugar or flavoring.

BARLEY WATER, WITH WHITE OF EGG.—Take a tablespoonful of coarse barley, and wash well with cold water, rejecting the washings. Then boil for an hour or more with a pint and a half of clean water, in a covered vessel or saucepan. Add a pinch of salt, enough sugar to render palatable, and strain. To 4 or 6 ounces of barley water thus prepared add the white of 1 egg. The value of this preparation in gastro-intestinal inflammation and irritation is not easily overestimated. In the entero-colitis of very young infants its exclusive administration for thirty-six or forty-eight hours will often relieve when all other measures have failed.

CANNED GRAPE-JUICE.—Cook the grapes 1 hour, or until soft. Strain through a fine strainer and cook the juice once more, adding 1 cupful of sugar to 1 cupful of juice. Boil well and put in glass jars.

TEA AND MILK.—An English physician has a formula for tea and milk, designed for persons with weak digestion who like the slight stimulant of tea, but are unable to use it as ordinarily prepared. The milk is put into a saucepan cold, with the requisite amount of tea in an infuser or loosely tied in a muslin bag. The milk is then allowed to

come slowly to the boil, and the moment the boiling point is reached the vessel must be taken from the fire and its contents quickly strained into a carefully-heated teapot. This concoction is said to be pleasant to drink and unwholesome to no one.

HOT MILK.—Milk heated just below the boiling point and sipped slowly as hot as possible, is nourishing and stimulating as well, and will give good results, if substituted, in many cases, for wines, etc.

MILK AND LIME WATER.—In cases where much nourishment must be administered in the form of milk and lime water, it is well to know the proportions are always an ounce of lime water to an ounce of milk mixed, to be used at the time the patient requires it.

MILK PUNCH.—Milk punch is useful where there is great weakness and little nourishment can be taken. Heat about one-half cup of milk and water, sweeten to taste and add 2 teaspoonfuls good whisky.

STRENGTHENING CHOCOLATE.—Take 1 pint of the best chocolate, 1 pound of rice flour, one-fourth pound arrowroot, one-half pound sifted loaf sugar. Thoroughly mix and rub together. A dessert-spoonful of this compound should be slightly moistened with milk and then stirred into a pint of boiling milk.

MULLED WINE.—Put into one-half cup cold water 3 cloves, one inch cinnamon and a grating of nutmeg. Cover, set in a pan of water and cook 10 minutes, not allowing it to boil. Add one-half cup claret wine, cook 10 minutes longer, strain and serve at once. Sweeten or not as taste dictates. You may vary it and make it more nutritious by adding an egg, the white and yolk beaten separately, with half a tablespoonful of sugar; pour into the wine and serve at once. This is a drink that our grandmothers gave for a cold, and it is equally efficacious to-day. For preparing it never use a tin cup, as the acid of the wine would render the beverage unwholesome.

RENNET WHEY.—One pint of scalding milk, not boiling; 1 tablespoonful prepared rennet, or piece of rennet skin that has been soaked in water. Sweeten to taste and strain. It will be ready for use when cool.

WINE WHEY.—One quart of new milk, heat to boiling point, take one-half teaspoonful of cream of tartar, 2 dessertspoonfuls of sherry wine, and put into the milk, let it simmer a few minutes, when the curds are formed, strain off. It is a cooling and slightly laxative drink; it is used when the patient can keep nothing on the stomach. Sweeten to taste with white sugar.

BUTTERMILK WHEY.—Boil the required quantity of fresh buttermilk. Season with a pinch of salt, a little loaf sugar, and nutmeg, if liked. Pour the whey off carefully.

MULLED BUTTERMILK, OR BUTTERMILK POP.—Rub a scant tablespoonful of butter into a teacup of flour, wet it up to thin paste with cold buttermilk, and pour into it 2 quarts of boiling fresh buttermilk; salt to the taste.

EGG NOG.—Beat the yolk of an egg in a tumbler with two teaspoonfuls brandy, and the same of sugar, level. Beat the white of the egg to a stiff froth, mix thoroughly with the yolk, and fill the glass with milk. Some patients cannot take egg and must have brandy and milk alone. Others take brandy and egg without milk, while the larger number take egg and milk alone. Some physicians advise using the yolk of the egg only.

EGG WINE.—Beat up a fresh egg until smooth and thick; add a teaspoonful of powdered loaf sugar; stir in a glass of best port wine. This, when permitted, is very strengthening, or a tablespoonful of brandy or whiskey; cracked ice in the glass is an improvement.

EGG MILK.—Beat a fresh egg until very light. Stir into a glass of new milk. Sweeten to taste and flavor with either nutmeg or lemon. Very strengthening. A pleasant change in the preparation of egg milk is to break the egg into a pint basin, and add about a tablespoonful of water; take away the white speck, and then beat evenly with a small whisk or fork until it becomes light; then add very gradually a gill of milk, heated to boiling point, beating all the time and continue until the whole is a fine foam. A little sugar and sherry or brandy may be added if liked. This way will be found to do away with a certain rawness of taste that is complained of so often. Sometimes it is a change to place this drink on ice until cold.

BRANDY COCOA.—Scald 1 cup of milk; mix one teaspoon of sugar with 1 tablespoon of boiling water and 1 teaspoon of cocoa; add it to the milk; cook over hot water 5 minutes; add one-half tablespoon of brandy and serve. A plain cocoa for the sick is to be made with boiling water, not milk. When serving add cream and sugar to the taste, or sugar only.

EGG COFFEE.—The invalid who is tired of taking egg tonic mixed with sherry, and who dislikes the taste of a raw egg, may enjoy the egg disguised in a cup of coffee. Prepare the coffee to the taste with cream and sugar, keeping it very hot until ready for the egg, which must be

beaten thoroughly in another cup and the prepared coffee added by degrees. Drink it hot, and it will be found not only palatable, but strengthening.

TEMPERANCE EGG-NOG.—Take a tall lemonade glass and fill it half-full of cracked ice. Break into it two fresh eggs, and pour in half a pint of milk, with just enough sugar to sweeten to the taste. Then shake it well and strain into another ice-cold glass. Top it off with a dash of nutmeg. Cooling and delicious.

MULLED JELLY.—One tablespoonful of currant jelly beaten with the white of an egg, and a little loaf sugar; pour over this one pint of boiling water, and break into it a slice of dry toast. This is very palatable.

LEMONADE.—For an invalid it should be made of the juice only. Squeeze about a tablespoonful of juice into a tumbler, add sugar to taste and fill tumbler with fresh water.

HOT LEMONADE.—This is made same as cold lemonade, save that boiling water is used. This is very useful in case of sudden colds.

FLAXSEED LEMONADE.—Flaxseed lemonade for coughs, colds and hoarseness is one of the old-fashioned woman's recipes. To make it, put two tablespoonfuls of sugar, and three tablespoonfuls of whole flaxseed into a pint of hot water. Steep an hour, strain, add the juice of one lemon, and set on ice until cold. If preferred, it may be drunk hot.

MILK LEMONADE.—Sugar, 1½ pounds, dissolved in a quart of boiling water, together with half a pint of lemon juice and 1½ pints of milk. This makes a cooling, agreeable, nourishing beverage.

BROTHS FOR THE SICK ROOM.

BEEF JUICE.—Slice juicy lean beef from the round, an inch thick, broil it quickly over a very hot fire, but without burning, until it is brown on both sides, lay it in a hot soup plate, cut it through in all parts with a very sharp knife, and set another hot plate on it, with the bottom against the meat; then grasp both plates firmly and press them together, squeezing the juice from the meat; let it run into another dish. This is the only perfect form of beef tea. Season to taste, or take in its natural state. A quick way to express the juice is to cut the hot meat in small pieces and squeeze with a lemon squeezer, or small juice extractor. The juice should be caught in a hot cup. It can be given to the youngest infant, as well as to adults.

It is the best food preparation to administer during the severity of an attack of any hot-weather disease. Give in teaspoonful to tablespoonful quantities at short intervals, say from 15 minutes to 2 hours, depending upon the urgency of the case. It may be given hot, or, if there is much nausea, it may be poured over a little shaved ice and then administered. Extract of beef, if pure, contains nothing but the flavoring matter of the meat from which it is prepared. It is, therefore, not a food at all, but a stimulant, and should be classed with tea and coffee. It should never be given to a sick person unless specially prescribed by a competent physician. Its strong meaty taste is deceptive, and a person depending upon it alone for food would die of starvation.

BEEF TEA.—One pound of lean beef (not one scrap of fat must be admitted) cut in small bits and put in a wide-mouthed bottle without water; cork closely, set in a kettle of cold water, bring to a boil and keep boiling for 3 or 4 hours, until the meat in the bottle is like white rags. Press out the juice and season with a little salt. This troublesome way of making beef tea used to be considered the only method, but either of the above given are preferable.

MOULDED BEEF TEA.—Put a pound of lean beef, cut fine, into a porcelain-lined stew-pan, with a pint of cold water. Let it stand half an hour, and then put it on the stove, where it will heat gradually. While boiling hot skim carefully, and put it where it will simmer gently for half an hour. When this is cooking, put a third of a box of gelatine in two tablespoonfuls of cold water. Salt the broth to taste, and strain, boiling hot, over the gelatine. Stir till dissolved. Strain into cups or moulds. Set away to cool on ice. This will be found a very desirable change to the invalid. The other beef teas can be moulded in the same manner, adding gelatine in quantities according to the amount of tea.

FROZEN BEEF TEA.—Put cold beef tea in a small pail, set in a wooden bucket, and surround it with salt and crushed ice. Let stand 10 minutes, then take off the cover and scrape the congealed beef tea from the sides. Beat well and then put back the cover. Do this two or three times, and the tea will be frozen smooth. This is excellent for invalids who must have all their food cold.

QUICK BEEF TEA.—A quick method of preparing a nourishing beef tea is as follows: Take any desired quantity of steak from the top part of the round, as this has less fat and more juice than any other part of the ox; remove every morsel of fat, and divide the meat into small pieces,

cutting across the grain; put the meat in a dry saucepan and allow it to sweat for 5 minutes over a slow fire, stirring occasionally to prevent sticking.

This is how all beef essences are prepared. After sweating for 5 minutes you will find the meat white in color and surrounded by a very rich, nourishing gravy, which, in cases of great exhaustion, may be given in this form. When using beef tea for invalids, a teaspoonful of the best whiskey adds greatly to its flavor and serves as a stimulant for the patient. This is especially good for grip during the convalescent stage.

To warm up beef tea, put in a cup, and set the cup in boiling water. The use of meat juice for medical purposes is a growing one, and is recommended for the aged, delicate infants and invalids, in all cases where complete nourishment is required in a concentrated form.

CLAM BROTH.—Simmer chopped clams in their own broth with an equal quantity of water, the broth strained through fine muslin, and seasoned with pepper. Hot milk may be added, and the whole served with toasted crackers.

CLAM FRAPPE.—Wash thoroughly 20 clams, and put them in a stew-pan with one-half cup cold water; cover closely and steam until the shells open. Strain the liquid, cool, and freeze it to a mush. Serve in glasses. A small amount may be frozen easily in a baking-powder can by setting it in a tin pail and packing with ice and salt in equal proportions. The mixture will freeze in about half an hour, and should be stirred once or twice during that time. This clam-juice is also very often diluted and served hot, and in some cases of gastric inflammation will be retained by the stomach when almost everything else is rejected.

VEAL BROTH.—Two pounds of knuckle of veal cracked into pieces and put over the fire with 2 quarts of cold water. Cover and cook slowly until it is reduced to 1 quart. Strain and season with salt. Meanwhile, soak 3 tablespoonfuls of pearl sago in a cup of cold water, heat by setting the dish in a pan of boiling water for half an hour, and stir occasionally. Put the strained broth in a double boiler and add the warmed sago to it, cook half an hour, and then stir into it 1 cup of cream heated to the boiling-point, and the well-beaten yolks of 2 fresh eggs. Let all only come to a boil, and remove from the fire at once. Serve as soon as possible.

NUTRITIOUS BEEF BROTH.—Allow a pint of cold water to a pound of lean beef (round steak preferable) cut in dice. Stir until the water

boils; it must not boil again, but simmer gently for 5 or 10 minutes, until all the juice is drawn out; then strain carefully into a bowl, and if there is a particle of fat on top, remove it with a piece of brown unsized paper. By this method you may take off every star of fat without wasting a drop of the beef tea, as is done when using a ladle or spoon. In this way you may have strong beef tea in 20 minutes.

MUTTON BROTH.—This is often ordered for invalids. It should be made as plainly as possible, and so as to secure the juice of the meat. Boil slowly about 2 pounds of lean mutton for two hours; skim it very carefully as it simmers, and do not put in much salt. Some vegetables may be added as a seasoning, and for some broths a little barley or rice.

CREAM SOUP.—Sago, pearl tapioca, barley or rice may be used. Take any white stock that is rich and well seasoned. Put into a saucepan a half-pint of the stock and the same quantity of cream. When it comes to a boil, add 1 tablespoonful of flour thoroughly moistened with cold milk, and let it boil up once. Have the tapioca or whatever you wish to use in the soup cooked, and add it to the soup and serve. Barley requires 2 hours to cook, rice 1 hour; sago and pearl tapioca must be soaked in cold water half an hour and cooked the same length of time.

CHICKEN BROTH.—Boil a common-sized chicken in 2 quarts of water (the water must be cold at first); cover and cook until the meat is ready to fall to pieces. Strain, let simmer, adding 4 or 5 tablespoonfuls of milk and a little salt and pepper. A tablespoonful of well-soaked rice or pearl barley may be added also; boil slowly one half-hour if this is done. Serve with dry toast. The meat of the chicken will make a very nice chicken salad for the family. Or, if the patient is sufficiently convalescent, make it into a *Paulet a la creme* for his use.

PAULET A LA CREME.—Chop the cooked chicken to a powder, rub through a wire sieve, mix with a little cream and 2 well-beaten eggs, and season with salt. Put in a mould, press, strain, and serve it hot or cold, cut in slices.

GRUELS FOR SICK PERSONS.

Gruels are generally ordered when there is fever. And gruel, properly made, is nourishing and palatable; but, if scorched or half-raw and full of lumps, it is most repulsive. Gruels are soothing remedies for bad colds.

INDIAN-MEAL GRUEL.—Take corn-meal and sift it into a quart of slightly-salted boiling water, stirring until it is the consistency of cream.

Let simmer one-half-hour or longer. Put in a bit of butter, if allowable; add sugar and nutmeg, if desired. A couple dozen raisins boiled in the gruel will improve the flavor. They need not be eaten. Another way is to serve the gruel in the proportions of one-half cup of the gruel and one-half cup of rich milk, heated together.

CAUDLE.—Make a water gruel as above, or a rice caudle. Strain it and add a wineglassful of wine or brandy. Sweeten with loaf-sugar, and grate in a little nutmeg.

RICE CAUDLE.—Soak 2 tablespoonfuls of rice in cold water for an hour. Drain and simmer in a pint of sweet milk (the milk must be cold to start with) until it is a pulp that can be rubbed through a sieve. Then put pulp and milk in a saucepan, with a bruised clove, a bit of stick cinnamon and loaf-sugar to taste. Simmer ten minutes longer. If too thin, add a little more milk. Serve with very thin slices of dry toast.

RICE GRUEL.—Add 1 tablespoonful of rice to 3 cups of boiling water. When it has cooked for three-quarters of an hour, a cup of milk is added, with a teaspoonful of salt, and the mixture is boiled for a few minutes longer. Strain the gruel through a puree sieve, pressing through all the rice that will go. Let the gruel boil up for 5 minutes after it is strained. Add sugar and nutmeg to the taste. Serve it with little slices of brown toast. Though this is a very palatable gruel, it is not so full of nourishment as a barley gruel; but it is valuable to persons suffering from intestinal disease, who cannot take heavier food.

BOILED FLOUR GRUEL.—Tie a teacupful of flour closely in a cotton cloth. Boil 6 hours. When cool untie, and let it dry in a moderate oven. If the outer part remains soft remove carefully. When wanted for use, grate 2 tablespoonfuls of it, and rub smooth with a little cold milk. Stir it into 1 pint of boiling milk, cook 5 minutes, season with salt and sugar to taste. Very good for children and infants in summer diseases; also for older invalids.

OATMEAL GRUEL (MILK).—Pour 1 pint of boiling water on 2 tablespoonfuls of oatmeal, add one-half pint milk and 1 teaspoonful salt, simmer in double boiler for one-half hour, add some raisins and grated nutmeg if permissible, strain, sweeten with loaf sugar if liked.

OATMEAL GRUEL (WATER).—One cupful oatmeal, 1 quart water; boil gently until it thickens, rub through a sieve with a spoon, and serve hot; sweeten if liked; add a pinch of salt. If too thick, thin with milk, water or broth.

MILK GRUEL.—One tablespoonful of Indian meal, 1 tablespoonful of wheat flour. Rub them smooth in a little cold milk or water. Pour into 1 quart of boiling milk, boil 10 minutes, season with butter and salt. Good for a cold.

CHICKEN OATMEAL GRUEL (A CONVALESCENT'S FOOD).—Boil a chicken till tender, remove the chicken, lay it one side for the well folks to eat. Strain the stock. There should be about a pint. Add one-quarter cup of fine oatmeal and cook 1 hour. Strain again, add 1 pint of milk, add salt and pepper to taste. Serve with inch cubes of bread, browned in the oven.

ARROWROOT GRUEL.—Make same as Rice Gruel, taking 1 ounce to 1 pint of milk, together with 1 teaspoonful sugar and a pinch of salt.

CRACKER GRUEL.—Roll until fine 6 soda crackers. Put 1 pint of cold water into a saucepan; when boiling add the rolled cracker. Do not stir, but boil 1 minute. Add sugar and nutmeg to taste, then 2 tablespoonfuls of thick cream. Serve warm.

MILK PORRIDGE.—Mix 2 tablespoonfuls of flour with a half cupful of cold milk, place a cupful and a half of milk over the fire in a saucepan; stir in the flour and the milk, a saltspoonful of salt, and, if desired, sugar and nutmeg to suit the palate of the patient; stir the porridge constantly until it begins to boil, then let it boil for 1 minute, and serve it. Some palates will not endure the sweetening and flavoring, but a simple bit of butter, and some like a dozen of raisins boiled in the milk; not to eat, but for the flavor. Cornstarch is nice to use in place of flour. Another variation is to make as above, remove from the fire, and stir in the stiffly-beaten white of an egg.

BAKED MILK.—Put milk in an earthen jar, cover the opening with thick paper, and bake in a moderate oven until the milk is as thick as cream. This is often palatable to invalids who do not care for raw milk.

RAISIN BROTH.—Boil 1 pound of raisins slowly in plenty of water for an hour. Make a thickening of cornstarch, moistened with cold water and a small piece of butter. Grate in a quarter of a nutmeg, and season with a tablespoonful of brandy or two of wine. Sweeten to the taste. Serve with a toasted cracker. This broth is both palatable and nourishing.

BREAD PANADA.—Six Boston crackers, scatter a little granulated sugar and a grain of salt over each cracker. Put them in a bowl and

just cover with boiling water. Grate a little nutmeg over them, and add 2 tablespoonfuls of wine. Cover the dish and let it stand in a warm place until the crackers are soaked, but not broken. Serve in the bowl. Cut, or crumbed, stale bread may be used instead of crackers, or the bread may be toasted.

CRACKER SOUP.—Put a bit of butter, the size of a hickory-nut, in a bowl, sprinkle in pepper and salt enough to make it palatable; break in crackers as for oyster soup, and turn on boiling water until the dish is filled. This is a substitute for oyster soup, and is a very nice dish. Use as much pepper as possible, if the disease is a sore throat. A person in perfect health will relish this dish.

SOLID FOODS.

CALVES'-FOOT JELLY.—Wash and clean the feet of a large calf. Put them to boil in 8 quarts of water. When the water is half boiled away, strain through a sieve and set it to cool. When perfectly cold, remove every particle of fat from the top; take up the jelly, removing any sediment that may be at the bottom. Set it over the fire again, letting it dissolve slowly without stirring; before it is hot add the whites of 6 eggs beaten stiff, the juice of 6 lemons, and 8 tablespoonfuls of powdered sugar. Let it boil, skimming thoroughly until it is perfectly clear. Try a teaspoonful on a plate to cool. If not sufficiently firm, boil longer or add half an ounce of gelatine or isinglass dissolved in enough water to cover it. Put some of the yellow skins of the lemon in a jelly-bag and strain through. This gives the jelly a fine amber color.

A stick of cinnamon may be put in at the same time with the lemon juice; remove before straining. Fasten the jelly-bag (it should be flannel; wring it out of hot water before using, to enable the liquid to run more freely) near the fire and do not stir nor press. Calves'-foot jelly can be made by simply sweetening, leaving out the lemon juice and cinnamon. When for invalids, the physician frequently orders a wine-glass of pale brandy or a pint of Madeira, white sugar in equal weight with the juice; boil it until it will jelly. When cold, pour in glasses and seal.

MUTTON JELLY.—Six shanks of mutton, 3 pints of water, pepper and salt to taste, one-half pound lean beef, a crust of bread toasted brown. Wash the shanks well, after soaking in water several hours, and place all ingredients in a saucepan with the water and simmer gently

for five hours. Season with salt. Strain, and when cold skim off the fat. Warm as much as is wanted at a time; or, serve cold.

MEAT JELLY.—Clear 1 quart of strong beef broth with white of egg. See "Clarifying Soups." Season with salt and pepper to taste, adding lemon-juice, cinnamon or other spices, if desired; set away to harden in little cups. When ready to use, turn out on a pretty saucer, and serve with a saltine or a bit of toast.

CHICKEN JELLY.—Chicken jelly may be used in a variety of ways. To make the jelly, take a fowl weighing about 3 pounds. Clean and remove the skin and fat. Cut it into pieces, and put them into a saucepan, with 2 generous quarts of water, a bay leaf, and some pieces of celery. Cover and heat slowly up to the boiling-point. Let it simmer for 4 hours, then season with salt and strain into glasses, and set away to cool. When cold, remove the fat. This jelly may be used cold or heated, and served like soup. Heat a glass of the jelly and add a gill of sherry or Madeira wine, 1 teaspoonful of dissolved gelatine, some sugar and the juice of half a lemon. Pour the liquid jelly into small cups, and set away to harden. This makes a very nourishing wine jelly. Pieces of the white meat of the fowl may be cut fine and put into a jelly glass, and the liquid jelly poured over them. When cold it is appetizing sliced and put between thin pieces of bread, buttered, and with the crust taken off, or with slices of jellied chicken with toasted crackers.

CHICKEN JELLY.—II. Boil 2 tablespoonfuls of finely-chopped cold chicken in sufficient water to make a cupful of the whole; thicken lightly with cornstarch in melted butter, pour over a slice of nicely toasted bread and serve hot.

SCRAPED RAW BEEF.—Take a tender piece of beef; cut across the grain; scrape with a spoon until all the pulp is removed; make a fresh surface by cutting off the scraped part with a thin, sharp knife; proceed in this way until all the meat is reduced to a pulp. If necessary, it may be eaten raw, spread very thin on slices of toast, or the pulp may be put in a hot frying-pan with a little butter, and allowed to barely cook through, stirring and turning constantly. A weak stomach will often retain scraped beef when it refuses all other solid foods.

RAW BEEF SANDWICHES.—Between two thin slices of toast place a small piece of juicy, fresh, tender raw beef, scraped fine and seasoned highly with salt and pepper.

HOT BEEF TOAST.—A slice of bread toasted to a delicate brown

and moistened with the juice from a hot, rare beefsteak is a little variation from the regulation toast that is appreciated by the invalid.

BROILED SQUABS, QUAIL, OR CHICKEN.—Squabs or quails should be split down the back, wiped dry and broiled on both sides. Season lightly with salt, pepper and butter. The breast only of a spring chicken should be broiled. Season as above.

BROILED SWEETBREADS.—Sweetbreads must be parboiled, then blanched in cold water and lemon juice. Broil until well browned. Salt and pepper.

CREAMED SWEETBREADS. No matter how you serve sweetbreads they must first be parboiled in clear water for 20 minutes. Then throw them into cold water and pick them into small pieces, rejecting the membrane. Put a tablespoonful of butter and 1 of flour in a saucepan and add half a pint of milk, and when boiling add the sweetbreads and half a teaspoonful of salt and a saltspoonful of pepper, and they are ready to serve. Sweetbreads are the pancreas of an animal and valuable for convalescents because they are a form of partially predigested food, and require but 1 hour in the stomach to complete the digestive process.

GRILLED OYSTERS. Put about 6 unopened oysters on a gridiron; as soon as they are partly open put into each a bit of fresh butter sprinkled with pepper; when they are quite open, which will take about 7 minutes, serve with them bread and butter and some slices of lemon.

INVALID'S MUTTON CHOP. Cut the chop rather thin and cook it thoroughly over a clear coal fire. Remove the skin from it.

CHOPPED BEEFSTEAK FOR THE INVALID.—A nutritious, stimulating food, more digestible than unchopped steak, and valuable in all sickness caused by mal-nutrition. Trim the fat from a pound of round or sirloin steak, cut the meat in inch pieces, put it into a meat chopper or mincing machine and chop it for 5 minutes; then take from the top of the meat the fine pulp which rises during the operation of the chopping; continue to chop and remove the pulp until only the fibre of the meat remains. Press the pulp into a round, flat cake, and broil it over a very hot fire for about 5 minutes on each side; season lightly with salt and cayenne pepper, and serve hot.

BACON FOR INVALIDS.—Slice the bacon very thin; almost thin enough to look through; broil on a gentle fire, turning very often; broil until the corners commence to curl; then serve on dipped toast.

CREAMED CODFISH.—Shred some codfish fine, put in cold water,

let come slowly to a boil to freshen it. Boil a moment, turn off the water and add hot cream, seasoned lightly with pepper if allowable, or rich milk in which a small lump of butter has been dissolved. Split and toast a Boston cracker, or a half slice of baker's bread from which the crust has been removed, and turn the codfish over this.

EGG ON TOAST.—A delicate way of preparing eggs is to poach 2 very lightly, put them on slices of crisp toast and pour over them a coffee cupful of hot cream. Or, dip a crisp slice of toast, either of white or Graham bread, into boiling salted water. Take out and butter lightly, and put the poached eggs upon them. Less rich than with milk.

WHIPPED EGG ON TOAST.—Place 2 tablespoonfuls of boiling water in a small saucepan on the stove. Break the egg in and stir briskly until the egg is set, but not at all hard. Serve on toast. This is no richer than the dropped egg.

EGG IN MILK.—Toast 2 thin slices of baker's bread, then butter; break 1 egg into a cup of milk and let the milk come to a scald, or till the white of the egg turns a milk white; add a pinch of salt; take the egg up carefully, so as not to break the yolk, and lay it on the toast, then pour the rest over it; it is a good dish for convalescents.

HOW TO EAT A RAW EGG.—Put the yolk of an egg into a dish with a teaspoonful of white sugar and a teaspoonful of orange or lemon juice and beat lightly together with a fork. Put the whites on a plate and add a pinch of salt. Then with a broad-bladed knife beat it to a stiff broth. Now as lightly as possible mix all together in the dish. Transfer it to a clean tumbler, which it will nearly fill if properly made. Any fruit juice may be used in place of orange or lemon, or even brandy if the doctor has ordered it.

CREAM TOAST FOR INVALIDS.—Heat some very thin cream to nearly the boiling point and salt well. Toast a slice of white or Graham bread a nice brown. Pour the cream over it and serve at once. Milk may be used instead of cream. No butter at first.

BAKED POTATO.—Potatoes must be served baked, and as soon as they are done cut in half lengthwise. Scoop out the mealy centre into a hot bowl. Mash and add 2 tablespoonfuls of cream and a little salt. Beat the white of 1 egg stiff, and mix it with the potato. The egg may be omitted.

ONION GRUEL.—This is excellent for a cold. Slice down a few onions and boil them in a pint of new milk, stir them in a sprinkle of oat-

meal and a very little salt; boil till the onions are quite tender, then sup rapidly and go to bed. Onions slowly stewed in weak broth and eaten with a little pepper will be found to be an admirable article of diet for patients of studious and sedentary habits.

GLUTEN WAFERS.—To 1 gill of cream add seven-eights cup of gluten and 1 saltspoon of salt. Roll out about as thick as a silver dollar and bake.

SWEET DISHES.

RICE AND EGG.—Wash thoroughly half a cup of rice and put it into a double boiler with just enough water to cover it. When the rice is nearly done, if any water remains pour it off and add 1 cup of milk and a little salt. Let the rice cook slowly until done. Beat an egg thoroughly, and the last thing before taking the rice from the fire stir the egg into it as lightly as possible, and serve hot with sugar and cream.

SAGO JELLY.—Wash one large tablespoonful of sago, soak one hour, boil it in half cupful of water; with pinch of salt, and a stick of cinnamon, until the grains grow clear; rind of lemon may be substituted for the cinnamon. Then add 1 pint of boiling milk, or milk and water, boil all together, sweeten and set away to cool.

ORANGE JELLY.—Take half pint of orange juice, beat the white of an egg to a stiff froth and add the juice, with 1 teacupful of sugar, to a scant pint of hot water. Have previously soaked half package of gelatine in 1 teacupful of cold water, add this to the other ingredients. Set the dish containing the mixture over the fire in a pan of boiling water, and stir until it is thoroughly heated. Strain and fill in moulds, or keep the halves of the orange peel intact and fill the jelly in these. Set in a cool place to harden.

TAPIOCA JELLY.—Soak the tapioca 5 hours, or over night. Simmer in a stew-pan until it becomes quite clear, then add the juice of a lemon or a glass of wine, with sugar to taste. Set in a cool place until ready to serve.

DYSPEPTIC CUSTARD.—This can be digested by weakened and dyspeptic stomachs: To half a pint of fresh milk heated lukewarm add 1 teaspoon of essence of pepsin; stir just enough to mix; let it stand till cold, serve plain or with cream and sugar and nutmeg; wines or cordials can be added as you like.

RICE CUSTARD.—Boil in a double boiler 2 tablespoonfuls of rice in 2 cups of milk for nearly 3 hours, when the rice should be perfectly soft.

Pass this through a colander into a saucepan, and put on the back of the stove to keep hot while 2 eggs are thoroughly beaten into 2 heaping teaspoonfuls of sugar and a pinch of salt. When this is light and the rice boils up, stir the eggs in slowly with a spoon for a minute or two till the whole is like a thick, soft custard.

ICE CREAM FOR AN INVALID.—Sometimes the patient has a fancy for something cold, and in the later stages of convalescence an ice is not at all harmful. Slightly scald a pint of sweet cream, mix with it three quarters of a cup of powdered sugar, 1 teaspoon of vanilla flavoring and one of good brandy. Beat stiff the whites of two eggs, stir in lightly and freeze. Freeze in a little tin pail with a tightly-fitting cover. Set in a wooden pail and pack around with alternate layers of ice and salt, lay wet cloths over the top and set in a cool place. In about three-quarters of an hour open the can, cut away the frozen portion from the sides. In half an hour more it should be solid.

STERILIZED MILK FOR CHILDREN.—Put the milk in clean bottles the size to have the contents used once. Then put the bottles into a large kettle or other metal receptacle. Pour cold water into the kettle until the water reaches the level of the milk in the bottles. Now close the mouth of each bottle with a plug of clean white cotton fibre. Heat the kettle and contents to 155 degrees Fahrenheit. Then remove from the fire and cover the whole affair snugly with a woolen cloth to keep from cooling at once. Leave half an hour, then take out the bottles and keep them in running water or in any cool place, leaving them still stoppered with the plug of cotton.

The flexible wooden stoppers used with some kinds of patent glass jars would answer in place of cotton, the object being to exclude air, dust and germs. Be careful not to heat above 155 degrees, or the milk will not taste quite right. In practice it will be found a good idea to make easier the circulation of the hot water by placing a wire frame an inch or two in height in the kettle beneath the bottles. Milk carefully treated by the above process may be warranted free from disease germs, and it will keep sweet about 24 hours.

MENU FOR BABY.—The average healthy child of 14 months and upward is better for a carefully chosen variety in its diet. The following bills of fare will answer for any healthy child of from 14 months up to 2½ years of age:

1. Milk to drink. Half a saucer of oatmeal with a little butter and

salt. Half a saucer of oatmeal with cream and sugar. A few teaspoonfuls of strained prune juice. 2. Thoroughly mashed potato, with a little butter, cream and salt. A thick strip of rare beefstead to suck (should be allowed only the juice). A few teaspoonfuls of finely scraped apple. Milk to drink. 3. Half a soft boiled egg. Milk toast. Baby tea—made of milk and warm water in equal proportions, with sugar and a drop of vanilla. 4. Bread and milk. A few teaspoonfuls fine grained apple sauce. Half slice of bread with beefsteak gravy. 5. Half saucer of rice with butter and salt. Half saucer rice with cream and sugar. Two or 3 teaspoonfuls of orange juice. Milk to drink. 6. Half teacup of beef tea. Crackers and milk. Third of a slice of bread with pure maple syrup. 7. A little strained fig syrup (if constipated) made by boiling figs in water with sugar. Mush and milk. Small slice bread and butter without crust. 8. A teaspoonful of the breast of chicken or turkey minced very fine. Toast and milk. Small lump of sugar for dessert. 9. Oatmeal, crackers and milk. Baked potato, cream and salt. Whipped cream, sweetened and flavored. 10. Half slice buttered toast, without crust. Bread and milk. Taste of custard, wine, jelly or melted vanilla or chocolate ice cream.

THE MEDICINE CLOSET.—Every well regulated household has a medicine closet. This does not mean that a whole cupboard out of the scant supply of the average flat must be given over to medicine bottles and plasters.

There are on sale at all furnishing stores and at most of the dry-goods shops medicine cabinets, varying in size and in make, but all of them falling within the average housekeeper's means. One of these should be fastened out of reach of the children in mother's room.

The properly equipped medicine cabinet is at least half closed and locked. In this compartment the poisons which are household remedies should be kept. Ammonia and alcohol belong to this class as well as laudanum and arnica. Salves, lotions and the like may be kept on the unguarded shelf compartment.

Antidotes for poisons, liniments for stings, cuts and bruises, plasters and plenty of material for bandages should be kept in the closet. Witch-hazel, for sores and burns, should not be forgotten, nor the helpful, simple soda, nor potash for gargling. It is an excellent idea to have tacked to the door of the cabinet a typewritten list of things to do and remedies to give in emergencies. In it also should be found the temporary relief

for a severe headache, the mustard for footbath, or the invaluable plaster, for which, however, might be substituted the more convenient mustard leaves; vaseline or pure sweet oil, which would be found to be invaluable for burns; oil of cloves, seidlitz powders and citrate of magnesia.

Kate Field has a word of advice for the coming woman. "Dear graduates" (she says, in addressing a class of college girls): "Cooking is the alphabet of your happiness. I do not hesitate to affirm that this Republic, great as her necessities are in many directions, needs cooks more than all else. The salvation of the national stomach depends upon them. We are a nation of dyspeptics; and Americans are dyspeptics because they eat the wrong foods, badly cooked, which they drown in ice-water. They are dyspeptics because our women don't know the rudiments of their business, and resign their kitchens into the hands of incompetent servants, of whom they are afraid, and whose impudence they frequently endure through sheer helplessness. Be cooks first, and anything you please afterwards. On you posterity waits."

In the A, B, C of a girl's life, cooking really comes first. It is the beginning of the alphabet of happiness. Remember the table is the hub upon which the health of the family revolves. Doctors are turned from our medical school by the hundreds to thrive off badly-fed people. Ruskin tells us that a nation's wealth depends entirely upon the number of healthy individuals the nation can show. If this be true, then we are poor indeed in America.

A person who is insufficiently nourished is in condition to accept and keep almost any disease that is flying in the atmosphere. We are told that if our stomach is in a healthy condition, we need not fear cholera or yellow fever—two dread diseases. We are also told that the well-fed, whose bodies are in a perfect condition, are safe in typhus regions; and we do know that the happiness of the individual is largely due to the condition of his stomach.

Edwin Russell made a very truthful remark when he said that "the physique has much more to do with the success of the man than his actual mental power; and, where the two are combined, success is certain; It requires but little observation to note that the very brainy woman, with a poor and insufficiently-nourished body, lasts but a little while. In sharp contrast to her short career is the well-fed and energetic woman whose body is equal in development, and who goes on to comfortable old age.

Boys and girls, at the age of entering college, break down, not having

the physique to go on with their studies, although their brain powers are perfectly developed. The mother, in building this foundation, has forgotten to put in the lasting stones. Not because she wishes to do it, but because cooking has fallen to the share of the ignorant, and she has been willing to trust her family in their hands; and, as a result, when the boys or girls enter the work of life, they enter it tired and worn, and do not find themselves at forty with a Gladstone physique at eighty. Not rich or costly dishes, but simple food so well prepared that the satisfied body shall not think of itself from one meal to another. It is the discomfort and hankering of an ill-fed stomach that drives some men to drink and others to the insane asylums.

Mrs. Rorer says that "in the twentieth century our cooks will be college graduates, women of position. All bills of fare will be made out with an object. The right and proper proportion of all materials will be converted into each meal, so that the muscles, bones and nerves will be equally fed. And if, for any reason, a child be born whose equilibrium is not perfect, a line of diet will be immediately prescribed to square him up, as it were."

The classes that fill our insane asylums do it not so much because they are overworked, but because their food has not been studied in accordance with their duties. It is suicidal for a man in an office to eat food that would be the proper sort for a farmer, and *vice versa.* To the really civilized mind, the hygiene of the stomach is the hygiene of the mind and soul, and the art of cooking one of the greatest of all arts. While the highest regions of social and intellectual achievement are open to women, they could not bring their power to bear more effectually than by seeing to it that the dinners of their husbands and brothers are well cooked.

Health, appetite, digestion and good temper are essential to success in nearly all the undertakings of life, including success in making love. But how can there be good health and good temper under the constant and depressing infliction of badly-cooked, indigestible meals? Napoleon is said to have lost the battle of Waterloo because of a fit of indigestion after a hastily-swallowed dinner. The pangs of the stomach prevented him from making his combinations on the field with his accustomed skill and rapidity. The people whose meals, however simple, are wholesome and well cooked, will fight almost to the death for their civil and political rights.

POISONS AND ANTIDOTES.

ACETATE OF LEAD.—Recumbent posture after emetics. Emetics and opium; give tincture aconite.

ACETATE OF LEAD (or sugar of lead).—Give Epsom salts or dilute sulphuric acid, provoke vomiting, give bland liquids, give castor oil.

ACIDS (Sulphuric, nitric, muriatic and oxalic).—Give an alkali, strong, clean soapsuds, a piece of soap will do, provoke vomiting, give bland liquids, rest patient, relieve pain by opium; if faint, stimulate, feed by enema.

ACONITE.—Provoke vomiting, stimulate well, keep up the breathing, give digitalis and atropine.

ALCOHOL.—Provoke vomiting, give hartshorn and water.

ALKALIES (hartshorn, soda, potash and lye).—Give vinegar or other acid, provoke vomiting, give bland liquids, secure rest, relieve pain by opium, and stimulate if necessary.

ARSENIC (Paris green, Fowler's solution, etc.)—Provoke vomiting, give dose castor oil, secure rest and stimulate if necessary.

ATROPIA.—Same as Belladonna.

BELLADONNA.—Emetics—mustard-flour in water; cold to head.

BLAND LIQUIDS—Are milk, gruel, raw eggs, oil of some kind, barley water, mucilage, etc.

CANTHARIDES.—Emetics, emollient drinks, opiates by mouth and rectum, large draughts of water to flush kidneys.

CARBOLIC ACID (Epsom salts, oil and glycerine).—Produce vomiting and stimulate.

CHLOROFORM.—Fresh air, artificial respiration (inclining head downward, pull tongue forward), brandy and ammonia injected in veins of leg.

CORROSIVE SUBLIMATE.—Albumen, white of egg (4 grs. sublimate require white of one egg), flour, milk. Equal parts of lime-water and milk. Emetics, or evacuate stomach by pump.

CROTON OIL.—Emetics, wash out stomach; followed by mucilaginous foods containing opium.

DECAYED MEAT AND VEGETABLES.—Provoke vomiting, wash out the stomach, give a purgative, give an enema, give powdered charcoal and peroxide of hydrogen.

DIGITALIS.—Recumbent posture after emetics. Emetics and opium. Give tincture aconite.

ILLUMINATING GAS.—Hypodermic injections of glycerin.

IODINE.—Provoke vomiting, give starch and water, give bland fluids.

MERCURY (corrosive sublimate, antimony or tartar emetic).—Provoke vomiting, give some infusion containing tannic acid, give raw eggs and milk, give dose of castor oil and stimulate if necessary.

NITRATE OF SILVER (lunar caustic).—Give strong salt and water, provoke vomiting, repeat many times.

NUX VOMICA.—Thirty grains of chloral and sixty grains of bromide of potash.

OPIUM (laudanum, morphine, paregoric, etc.)—Provoke vomiting repeatedly, give strong coffee or tea in large quantities, keep up the breathing, walk patient around, do not allow him to go to sleep.

OXALIC ACID.—Lime; not potash or soda.

PHOSPHORUS.—Provoke vomiting by repeated five-grain doses of sulphate of copper, give dose of magnesia, but no oil.

POISONOUS GASES.—Fresh air, oxygen, artificial respiration, nitroglycerine, stimulation.

STRYCHNINE.—Same as Nux Vomica.

TOADSTOOL (hemlock, tobacco, etc.).—Provoke vomiting and give a purge, stimulate well and keep up the breathing, preferably with battery.

ZINC SALTS.—Carbonate of soda, emetics, warm demulcent drinks.

Of course it would be decidedly dangerous for any one except a physician to meddle with the drugs mentioned as antidotes. When poison has been taken, a doctor should be sent for in hot-haste. A stomach pump may be required, even in what seems a simple case to treat, and patients frequently require an antidote or stimulant administered hypodermatically. A physician is certainly the first necessity, but while awaiting his arrival it is highly necessary not one instant of time should be lost, lest the patient soon sink beyond assistance. Something may be done in every case if the proper method be understood.

To provoke vomiting, mix a tablespoonful of ground mustard in a pint of lukewarm water (give warm water alone while mixing the mustard and water), or a teaspoonful of powdered ipecac, or a tablespoonful of the syrup, or a quicker and simpler way, thrust the finger down the throat.

For the bite of a *mad dog*, the actual cautery should instantly be applied to the wound, and large doses of zinc, or muriate of iron, given for several days.

Paste up a printed list of poisons and antidotes on the inside of some closet door.

THE BEST COSMETICS.

CHAPTER XXXIX.

IF it be true "that the face is the index of the mind," the recipe for a beautiful face must be something that reaches the soul. What can be done for a human face, that has a sluggish, sullen, arrogant, angry mind looking out of every feature? An habitually ill-natured, discontented mind ploughs the face with inevitable marks of its own vice. However well shaped, or however bright its complexion, no such face can ever become really beautiful. If a woman's soul is without cultivation, without taste, without refinement, without the sweetness of a happy mind, not all the mysteries of art can ever make her beautiful.

And, on the other hand, it is impossible to dim the brightness of an elegant and polished intellect. The radiance of a charming mind strikes through all deformity of features, and still asserts its sway over the world of the affections. Yet we have found no art which can atone for an unpolished mind, and an unlovely heart.

We cannot resist the temptation of giving a beautiful quotation from an old Greek poet, which proves that common sense on this subject of beauty is not by any means of recent date in the world.

> "Why tinge the cheek of youth? the snowy neck,
> Why load with jewels? why anoint the hair?
> Oh, lady, scorn these arts; but richly deck
> Thy soul with virtues; thus for love prepare.
> Lo, with what vernial tints the apple blooms?
> Say, doth the rose the painter's hand require?
> Away, then, with cosmetics and perfumes!
> The charms of nature most excite desire."

Though it is true that a beautiful mind is the first thing requisite for a beautiful face, yet how much more charming will the whole become through the aid of a fine complexion? It is not easy to overrate the importance of complexion. The features of a Juno with a dull skin would never fascinate. The forehead, the nose, the lips, may all be faultless in size and shape; but still, they can hardly look beautiful without the aid of a bright complexion. Even the finest eyes lose more than half their power, if they are surrounded by an inexpressive complexion. It is in the coloring or complexion that the artist shows his great skill in giving expression to the face. Overlooking entirely the matter of vanity, it is a woman's duty to use all the means in her power to beautify and preserve her complexion. It is fitting that the "index of the soul" should be kept as clean and bright and beautiful as possible.

A stomach frequently crowded with greasy food, or with artificial stimulants of any kind, will in a short time spoil the brightest complexion. All excesses tend to do the same thing. Frequent ablution with tepid water, followed by gentle and very frequent rubbing with a dry napkin, is one of best cosmetics ever employed.

SMOOTHING OUT WRINKLES.

Many fashionable ladies in Paris used to bind their faces, every night on going to bed, with thin slices of raw beef, which is said to keep the skin from wrinkles, while it gives a youthful freshness and brilliancy to the complexion. We have no doubt of its efficacy.

The celebrated Madame Vestris used to sleep every night with her face plastered up with a kind of paste to ward off the threatening wrinkles, and keep her charming complexion from fading. We will give the recipe for making the Vestris' Paste for the benefit of any of our readers whose looking-glass warns them that the dimness and wrinkles of age are extinguishing the roses of youth:

The whites of four eggs boiled in rose-water, half an ounce of alum, half an ounce of oil of sweet almonds; beat the whole together till it assumes the consistence of a paste.

The above spread upon a silk or muslin mask, and worn at night, will not only keep back the wrinkles and preserve the complexion fair, but it is a great remedy where the skin becomes too loosely attached to the muscles, as it gives firmness to the parts.

There are many disorders of the skin which are induced by culpable

ignorance, and which owe their origin entirely to circumstances connected with fashion or habit. The frequent and sudden changes in this country from heat to cold, by abruptly exciting or repressing the secretions of the skin, roughen its texture, injures its hue, and often deform it with unseemly eruptions. And many of the fashions of dressing the head, are still more inimical to the complexion than the climate. The habit the ladies have of going into the open air without a bonnet, and often without a veil, is a ruinous one for the skin.

Indeed, that fashion of ladies' bonnets, which only cover a few inches of the back of the head, is a great tax upon the beauty of the complexion. In this climate, especially, the head and face need protection from the atmosphere. Not only a woman's beauty, but her health requires that she should never step into the open air, particularly in autumnal evenings, without a sufficient covering to her head. And, if she regards the beauty of her complexion, she must never go out into the hot sun without her veil.

FACE HUMORS REPULSIVE.

The custom common among ladies, of drying the perspiration from their faces by powdering, or of cooling them when they are hot, from exposure to the sun or dancing, by washing with cold water, is most destructive to the complexion, and not unfrequently spreads a humor over the face which renders it hideous forever.

A little common sense ought to teach a woman that when she is overheated she ought to allow herself to cool gradually; and, by all means, avoid going into the air, or allowing a draught through an open door, or window, to blow upon her while she is thus heated. If she will not attend to these rules, she will be fortunate, saying nothing about her beauty, if her life does not pay the penalty of her thoughtlessness.

Ladies ought also to know that excessive heat is as bad as excessive cold for the complexion, and often causes distempers of the skin, which are difficult of cure. Look at the rough and dingy face of the desert-wandering gipsy, and you behold the effects of exposure to alternate heats and colds.

To remedy the rigidity of the muscles of the face, and to cure any roughness which may be induced by daily exposure, the following wash may be applied with almost certain relief: Mix two parts of white brandy with one part of rose-water, and wash the face with it night and morning.

The brandy keeps up a gentle action of the skin, which is so essential to its healthy appearance, also thoroughly cleanses the surface, while the rose-water counteracts the dying nature of the brandy, and leaves the skin in a natural, soft, and flexible state.

If Satan has ever had any direct agency in inducing woman to spoil or deform her own beauty, it must have been in tempting her to use paints and enamelling. Nothing so effectually writes *memento mori!* on the cheek of beauty as this ridiculous and culpable practice. Ladies ought to know that it is a sure spoiler of the skin, and good taste ought to teach them that it is a frightful distorter and deformer of the natural beauty of the "human face divine." The greatest charm of beauty is in the expression of a lovely face; in those divine flashes of joy, and good-nature, and love, which beam in the human countenance.

DAUBS OF PAINT AND ENAMEL.

But what expression can beam in "a face bedaubed with white paint and enamelled? No flush of pleasure, no thrill of hope, no light of love can shine through the incrusted mould." Her face is as expressionless as that of a painted mummy. And let no woman imagine that the men do not readily detect this poisonous mask upon the skin. Many a time have I seen a gentleman shrink from saluting a brilliant lady, as though it was a death's head he were compelled to kiss. The secret was, that her face and lips were bedaubed with paints. All white paints are not only destructive to the skin, but they are ruinous to the health.

Excessive use of powder is also a vulgar trick. None but the very finest powder should ever be used, and the lady should be especially careful that sufficient is not left upon the face to be noticable to the eye of a gentleman.

I am aware that a beautiful bosom is a subject which must be handled with great delicacy; but my book would be incomplete without some notice of this "greatest claim of lovely woman." And, besides, it is undoubtedly true, that a proper discussion of this subject will seem peculiar only to the most vulgar minded of both sexes. If it be true, as the old poet sung, that

"Heaven rests on those two heaving hills of snow,"

why should not a woman be suitably instructed in the right management of such extraordinary charms?

The first thing to be impressed upon the mind of a lady is, that very low-necked dresses are in exceeding bad taste, and are quite sure to leave upon the mind of a gentleman an equivocal idea, to say the least. A word to the wise on this subject is sufficient. If a young lady has no father, or brother, or husband to direct her taste in this matter, she will do well to sit down and commit the above statement to memory. It is a charm which a woman, who understands herself, will not leave to the public eye of man, but to his imagination. She knows that modesty is the divine spell that binds the heart of man to her forever.

But my observation has taught me that few women are well informed as to the physical management of this part of their bodies. The bosom, which nature has formed with exquisite symmetry in itself, and admirable adaptation to the parts of the figure to which it is united, is often transformed into a shape, and transplanted to a place, which deprives it of its original beauty and harmony with the rest of the person.

This deforming metamorphosis is effected by means of stiff stays or corsets, which force the part out of its natural position, and destroy the natural tension and firmness in which so much of its beauty consists. A young lady should be instructed that she is not to allow even her own hand to press it too roughly.

INJURIES FROM HARD SUBSTANCES.

But, above all things, to avoid, especially when young, the constant pressure of such hard substance as whalebone and steel; for, besides the destruction to beauty, they are liable to produce all the terrible consequences of abscesses and cancers. Even the padding which ladies use, to give a full appearance, where there is a deficient bosom, is sure, in a little time, to entirely destroy all the natural beauty of the parts.

As soon as it becomes apparent that the bosom lacks the rounded fullness due to the rest of her form, instead of trying to repair the deficiency with artificial padding, it should be clothed as loosely as possible, so as to avoid the least artificial pressure. Not only its growth is stopped, but its complexion is spoiled by these tricks. Let the growth of this beautiful part be left as unconfined as the young cedar, or as the lily of the field. And for that reason the bodice should be flexible to the motion of the body and the undulations of the shape. The artificial india-rubber bosoms are not only ridiculous contrivances, but they are absolutely ruinous to the beauty of the part.

The following preparation, very softly rubbed upon the bosom for five or ten minutes, two or three times a day has been used with success to promote its growth: tincture of myrrh, ½ oz.; pimpernel water, 4 oz.; elder-flower water, 4 oz.; musk, 1 gr.; rectified spirits of wine, 6 oz.

I have known ladies to take a preparation of iodyne internally to remedy a too large development of the bosom. But this must be a dangerous experiment for the general health. The following external application has been recommended for this purpose: strong essence of mint, 1 oz.; iodine of zinc, 2 gr.; aromatic vinegar, 2 gr.; essence of cedrat, 19 drops.

A BEAUTIFUL BOSOM.

If, from sickness, or any other cause, the bosom has lost its beauty by becoming soft, the following wash, applied as gently as possible morning and night, will have a most beneficial effect: alum water, ½ oz.; strong camomile water, 1 oz.; white brandy, 2 oz. If the whole body is not afflicted with a general decay and flabbiness, the use of this wash for a month or two will be quite sure to produce the happiest effects.

Though at present little known outside the medical profession, massage is not a new thing, writes Helen Korte. The ancient Romans practiced it. Like other good things the ancients knew, it fell into disuse. It remained for a European to revive it, and make a system of its application.

Massage means simply a rubbing, kneading and manipulating of the skin and the muscles lying immediately beneath it. It is prescribed for many ills. It strengthens the muscles and nerve-centres by promoting a steady flow of blood to the parts exercised, and when applied to the whole body, it equalizes the circulation in a way that brings health and strength. It is always restful, if properly administered, and is especially beneficial to nervous sufferers. The method of its application has been reduced to a science.

The first step in the process is to carefully wash the face. The finest skin is full of grease and impurity, and hot water will remove it better than cold. So take steaming hot water, if you can get it. If it is at all "hard," put into it a pinch of powdered borax, enough to soften it thoroughly. Then with a soft, linen cloth, or fine sponge, and the purest soap you can buy, wash the face. Do not rub it hard. Trust the hot water and soap to cleanse it. Rinse the face with clear, tepid water, and dry it gently with a soft towel.

Now moisten the fingers with some sort of fine, pure oil. Sweet almond oil, scented with a drop of two of attar of roses, is good and pleasant to use. Some recommend vaseline, and it answers the purpose very well in many cases. But if there is any tendency to an undue growth of hair on the face, it should be avoided, as vaseline promotes this growth. Women whose skins are naturally oily should be sparing in the use of the oil, perhaps may do without it altogether.

Rub the surface of the face and neck, chest also, if desired, with the inside of the fingers held straight. Use both hands, and pull and stretch the skin in every direction. Rub the forehead from the centre out toward the temples eight or ten times, with firm, slow strokes. Rub up and down from hair to nose; then from the root of the nose up and outward over the eyes. Stroke gently but firmly under the eyes, where the "crow's feet" are wont to gather, passing the fingers close under the eyes and up toward the outer points of the eyebrows.

DIRECTIONS FOR MASSAGE.

Then stroke a little lower down, from the bridge of the nose out over the cheekbones. Most people sooner or later contract an ugly wrinkle running from the side of the nose down and out to the corner of the mouth. Attention should now be directed to this point, none the less if the line has not yet made its appearance. The old saying that "an ounce of prevention is worth a pound of cure" is especially applicable to wrinkles.

Put the fingers close to the nose on each side and rub outward into the cheek. It is better not to rub back and forth across the cheeks. Instead, rub around the cheeks from the point of the chin outward and then in before the ear, with the inside of the fingers or hand. This helps to round the cheek. Pressure and rubbing outward will flatten it.

The second "movement" consists in pinching up bunches of skin and muscle between the thumb and fingers. The fingers should go deep as possible, pressing firmly, but not so hard as to cause pain. The whole surface of face and neck should be thoroughly manipulated in this way, then, if desired, a few moments rest may be taken.

The next movement is similar to this, but lighter, smaller pinches of flesh are taken up; little more than the skin receiving treatment this time. After this, another rest will not be out of order.

Next, with the ends of the fingers lightly stroke every part of the

face. This is supposed to be a gentle tonic for the skin, and also to give firmness to the muscles. Care should be used not to strike too hard.

Next, straighten the hands and press with the inside of the fingers on every part of the face in turn. The pressure should be firm and hard, but should not be continued too long. These may be considered the finishing touches. If much oil has been used, and the face still seems greasy, it may be bathed again in tepid water in which a little borax has been dissolved.

The massage should occupy at least fifteen or twenty minutes, and should be practiced daily for a week or ten days, when a vacation of a day or two may be taken. Then the work should begin anew. After a few weeks the benefit of this treatment will be plainly seen, and then a thorough rubbing two or three times a week will be sufficient to keep all in good condition.

If those who undertake this treatment, can and will spend some hours of each day in outdoor exercise, they will find themselves rapidly improving in both looks and health.

WHEN TO AVOID COSMETICS.

If the black-heads and pimples with which so many are afflicted, do not readily disappear during the rubbing process, simple washes may be used to expedite their departure.

FOR BLACK-HEADS.—Thirty-six grains of sub-carbonate of soda in eight ounces of distilled water, with six drachms essence of rose. Rub over the face with a soft cloth.

FOR PIMPLES.—Thirty-six grains of bi-carbonate of soda, one drachm of glycerine, one ounce spermacite ointment. Leave the mixture on the face fifteen or twenty minutes, then wipe it off with a soft cloth.

It is hardly necessary to say that cosmetics of all sorts should be strictly avoided while the face is under treatment. They would materially interfere with its efficacy. Many of them contain poisons. Even when free from these, they coarsen and deaden the skin by filling the pores and stopping their natural excretions, and also by preventing a free passage of air and sunlight to the skin.

Small solid moles are most quickly removed by touching them with a pencil of nitrate of silver dipped in water and rubbing lightly on the affected spot. The surrounding skin may be protected with vaseline or wax. The caustic will not occasion pain, but turns the skin black where

it touches and forms a scab, which comes off, leaving the mole lessened in size. In two or three weeks apply the nitrate again, and repeat at intervals until the mole disappears. Moles with an elastic neck of skin are best healed by tying waxed silk or a rubber band round the neck and tightening it daily till the mole drops off.

Large, level moles should have a paste of salycilic acid rubbed up with four times as much vaseline bound on them with linen, held by adhesive plaster. The dressing is repeated every night until the mole whitens, when its skin is allowed to deaden and scale off. When the spot heals thoroughly the treatment is renewed until the mole is erased. Moles with fine veins apparent on the surface, or red, angry ones, should be submitted to a surgeon, as dangerous sores may result from unskilled handling.

The possession and preservation of a good complexion, as we have seen, almost entirely depends on good health, care and a judicious selection of palliatives for its ailments. These are legion, and for them I have selected a few well-known, but simple remedies, said to be efficacious in the majority of cases and hurtful in none.

PRESCRIPTION FOR THE COMPLEXION.

Among the many ailments, roughness and redness of skin are, perhaps, the most common. A lady of sixty and over, who has a beautifully clear and soft skin, tells me she was afflicted with these annoying complaints until she began the daily use of the following preparation: Dissolve or cut five cents' worth of gum benzoin in one pint of alcohol; add two teaspoonfuls of this mixture to one quart of pure rain-water, and apply to the face with a soft cloth, or by putting a little in a basin of water. It will be found a preventive, as well as a cure for either; also a very refreshing wash for the face after a tiresome journey or outing expedition, as it is soothing to the skin and a palliative for the effects of sun and wind.

A good remedy for roughness, also tenderness of skin, is the well-beaten white of an egg. Bathe the face freely in the albumen, rubbing it well into the skin, and the wrong way of the wrinkles, if there are any, and let it dry on for some minutes; then wash it off in tepid water, without soap, and dry the face thoroughly with a soft towel. This simple remedy can be applied daily, and is said to insure a clear, velvety skin for its user. By adding half a teaspoonful of sulphur, it will be found

very efficacious for redness of skin. Apply at night, and do not go to bed until the thin paste it makes has thoroughly dried on. Remove in the morning in the same way as directed for the egg-bath; be sure the face is dry and well cleansed before applying.

Another highly recommended, though none too pleasant prescription, is a teaspoonful of sulphur dissolved in a cup of sweet milk. It can be applied to the skin with linen or the palms of the hands; leave it on over night or remove after a short time with tepid water. In either case, allow it to dry over the skin before removing. A remedy for which much is claimed as a complexion beautifier, particularly for those skins with large pores, is barley paste, made of the white of one egg, one scant teaspoonful of alum, and enough ground barley to mix into a thin paste. Apply at night; not too often.

BATHS OF WARM MILK.

An old remedy, with whose good and beautifying qualities even the Roman ladies of ancient times were acquainted, is a nightly bath of warm milk. Wash the face in tepid water, dry it, and then lave many times with warm milk, until every pore is open and muscle smoothed; wait some time before gently rubbing the face quite dry. Another simple lotion which is said to soothe, smooth and whiten the skin, is plain spirits of camphor much diluted with water. It can be used several times a day.

The above lotions are also good for chapped or tanned skin. Lemon juice, buttermilk or apple vinegar will also be found effective and harmless for the latter. It is, though, considered quite the thing to have the face and hands tanned; thus telling to all beholders that one's purse has allowed her to pass the season at some summer resort or in the country.

For chapped skin there are few, if any, better remedies than sweet cream. Should this not be available, try a lotion made of equal parts of pure glycerine and rosewater, or scented rain-water. This healing lotion can be applied at night, or, when the skin is very tender or sensitive to the air, before going out-doors. It will leave no trace, if plenty of time is allowed for it to dry in. Some claim that its efficacy as a preventive for chapped skins is enhanced by laying over it a slight powdering of pulverized orris root or rice powder.

I am no advocate of the use of powder, but either of those mentioned is harmless; therefore I can see no great harm in their use, or that of any

pure face powder, when common sense rules the application. I have only a few words to say under this head, and they are these: Be sure the powder is harmless, and that it is washed off every night and before applying any healing lotion.

Another desirable thing is to select a flesh-tinted powder, or better yet, a tint similar to your complexion; that is, if your complexion has a rosy cast, choose a powder with a just perceptible pink tinge; if a creamy white, a creamy tint, etc. You will thus avoid the dead, pasty look given by pure white powders, telling to every beholder that you are powdered.

Freckles, which are said to denote an excess of iron in the blood, can be removed by frequently dampening the spots with a very strong solution of powdered saltpetre; by moistening them often with the liquor made from allowing a tablespoonful of grated horse-radish to stand in half a cup of buttermilk over night; or by wetting them at frequent intervals in a strong solution of borax.

LEMON JUICE AND SULPHUR.

Here is an old-time remedy, said to be a preventive to sunburn and freckles, as well as a cure for the latter. When ready to retire, cleanse the face, dry it, and spread over it a thin paste made by squeezing the juice of half a lemon over one tablespoonful of sulphur. Use the ordinary flour of sulphur for this, as well as all sulphur remedies. Allow it to dry on well before going to bed. If it does what is claimed for it, very few spots will be visible the next morning, when the remnants of paste have been removed by clear water. Although most sulphur lotions are said to be beneficial to the skin, they should not be used oftener than twice a week; the bleaching properties of the sulphur may be deleterious to the skin, if used too often.

One of the most annoying ailments of all are the unsightly black-heads—comedones. To exterminate them, thoroughly steam or bathe the face with hot water; then, while the skin is soft and in a relaxed condition, squeeze them out with a small, old-fashioned watch-key. After this rather disagreeable operation, the face should be bathed in tepid water, tenderly dried, and a soothing lotion applied. A solution of alum added to the water will assist in closing the pores from which the black-heads were expelled.

Moles, moth-patches and superfluous hairs add their modicum of blemish to many complexions. I think I am safe in asserting that the

tweezers or electric needle are the only real extirpators for the latter. Either, if properly manipulated, will permanently remove them. One can, if she have the nerve, operate the tweezers herself, or trust them to a friend; but the electric needle should be employed only by one versed in its use. Moles and moth patches, like pimples and suppurating blotches, are caused by some derangement of the system. Their treatment should be entrusted to a reliable physician only.

Some one has said, "The most tantalizing trial incident to the excursion through this vale of tears is a red or shiny nose." Either can be cured only by removing the cause, bad circulation, bad digestion, or a "mirly-moirly" condition of the cuticle; and, I am sorry to say, not always then. Bad circulation can be removed by Turkish baths, massage and the loosening of all tight clothing; bad digestion, by proper nourishment and medication; and the damp condition of the cuticle by frequently bathing the offending member with some astringent and strengthening wash.

If one's nose persists in assuming a red or purplish tinge when exposed to the cold, it will be found a good plan to bathe it freely in very cold water before leaving the house. Some say, "Make the cure sure by following this with a light layer of pure powder."

ROUGH AND HARDENED SKIN.

Now we come to one of the trials of growing old—wrinkles. When these have once made their appearance, it is almost impossible to rout them. It is said, massage treatment will do this; but it requires the hand of a professional and the patience of Job to accomplish their removal in this way. Lanoline, wool-fat, made by extracting the fat from sheep's-wool by boiling in alcohol, is also said to be an effectual wrinkle-destroyer, as it feeds, strengthens and softens the skin. Before applying it or olive or sweet-oil, which are said to accomplish the same purpose, wash the face in warm water and dry it; then dip the fingers in the fat and rub it well into the skin. As more depends on the rubbing than on the fat, but little of the latter is used as a treatment.

A better way than either is to delay and prevent their coming, by keeping the skin soft and free from the oily waste the blood brings to the pores for egress by the cleansing action of the bath, not only for the face, but body.